	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
8 Personal Emoluments						
Established staff	(18)	6,362	24,795	25,742	26,618	77,155
Non Established staff	(19)	27,911	104,387	111,511	114,881	330,779
		34,273	129,182	137,253	141,499	407,934
9 Running Expenses						
Maintenance and Running Expenses	(20)	4,500	18,250	18,430	18,610	55,290
Transport and Travelling	(21)	981	4,280	4,395	4,805	13,480
Tools and Materials	(22)	1,610	6,850	7,200	7,525	21,575
		7,091	29,380	30,025	30,940	90,345
TOTAL		43,344	194,682	203,948	214,549	613,179

(N) = As costed for construction by Department of Forestry and Game.

(b) Notes on Expenditure

(1) Housing

1970/71	1 EH.6 house for Clerical staff at Kanjedsa (with water borne sanitation etc.)	£ 950
	1 EH.6 house at Chongoni for newly appointed Forest Ranger	800
	3 Blocks of Class F houses each for two families to replace temporary housing. To be sited at Chigumula, Dedsa and Chongoni.	3,600
	1 DH.7 house for new A.C.F. (institutional) S. Region, to assist the Regional officer at Kanjedsa.	4,500
1971/72	1 EH.6 for Junior staff at Kanjedsa (with water borne sanitation)	950
	3 EH.6 houses, one at Zomba to house a Clerical Officer (replaces temporary housing), one at Dedsa to house a Foreman Mechanic (replaces temporary housing), one at Chongoni for newly appointed clerical staff. 3 at £800 (excl. water borne sanitation)	2,400
	4 Blocks of Class F houses to replace temporary housing. To be sited at Zomba, Chigumula, Dedsa and Chongoni at £1,200	4,800

1972/73	1 EH.6 for Junior staff at Kanjedsa (with water borne sanitation etc.)	£ 950
	3 EH.6 houses, one Zomba to house a Clerical officer (replaces temporary housing), one at Dedza to house a Clerical officer (replaces temporary housing), and one at Chongoni to house a newly appointed Forest Ranger. 3 at £800.	£ 2,400
	3 Blocks Class F houses to replace temporary housing. To be sited at Chigumula, Dedza, Chongoni at £1,200	3,600

This follows the Department's policy of replacing temporary traditional housing with permanent brick housing in order to establish a permanent staff and labour force.

(2) Other Buildings

1970/71	Extensions to Kanjedza office required to make provision for additional, essential staff; namely Research Forester for S. Region, Survey Assistant for S. Region and drawing office.	650
	New fire tower to cover new Chongoni planting area.	250
1971/72	A second fire tower at Chongoni to cover 1971 and 1972 planting area.	250
1972/73	New fire tower at Zomba to cover 1971 and 1972 planting area.	250

(3) Roads and Bridges

1970/71	3 miles of road at Zomba to allow for 250 acres of new planting and improvements to fire access system. 3 miles at £600/mile.	1,800
	1 mile of new road at Ndirande to allow for planting of 80 acres in "Plateau" area.	350
	½ mile of road at Cholomwani to complete access to planted area. ½ mile at £500 per mile.	250
	3 miles of road at Dedza to allow for the planting of 150 acres and improvements to timber extraction and fire access routes. 3 miles at £350/mile.	1,050
	8 miles of road at Chongoni to allow for new planting of 800 acres. 8 miles at £200/mile.	1,600
	2 miles of road at Bunda to allow for new planting of 200 acres. 2 miles at £100/mile.	200
	1 mile of road at Luwawa to improve fire access routes and general communications.	200

1971/72	3 miles of road at Zomba to allow for 300 acres of new planting. 3 miles at £600/mile.	£ 1,800
	1 mile of road at Ndirande to improve access to existing plantations.	350
	2 miles of road at Masenjere to give access to planted area and allow for new planting of 100 acres. 2 miles at £200/mile.	400
	2 miles of road at Dedsa to allow for planting of 180 acres. 2 miles at £100/mile.	600
	10 miles of road at Chongoni to allow for new planting of 1,000 acres. 10 miles at £175/mile.	1,750
	2 miles of road at Bunda to allow for new planting of 200 acres. 2 miles at £100/mile.	200
	4 miles of road at Chikangawa to allow extraction of timber to sawmill. Major realignments, oulverting and upgrading to withstand heavy traffic. 4 miles at £200/mile.	800
1972/73	4 miles of road at Zomba to allow for new planting of 450 acres. 4 miles at £600/mile.	2,400
	Improvements to 2 miles of road at Ndirande for fire access and log transport	400
	1 mile of road at Masenjere to allow for new planting of 100 acres.	200
	2 miles of road at Dedza to allow for new planting of 180 acres. 2 miles at £350/mile.	700
	10 miles of road at Chongoni to allow for new planting of 1,000 acres. 10 miles at £200/mile.	2,000
	2 miles of road at Chikangawa to facilitate extraction of sawlogs to sawmill. 2 miles at £300/mile.	600

(4) Landrovers

Jan-Mar 1970	One S.W.B. Landrover ordered 1969 carried over	910
1970/71	Replace MG 5529 at Amalika, 4 years old with a high mileage of over 80,000 miles. 1 L.W.B. with seat belts etc.	1,050
	Replace MG 4954 at Ndirande, 6 years old with a mileage of over 80,000 miles. 1 L.W.B. with seat belts etc.	1,050

1970/71 cont.	Replace MG 5174 written off 1969 Dedsa, with S.W.B. with seat belts.	£ 910
1971/72	1 new Landrover for logging supervisor Zomba mountain, to replace one Canadian Scout Car 1 L.W.B. with seat belts etc.	1,050
	Replace MG 4990 at Dedsa, 7 years old with a mileage of over 80,000 miles. 1 S.W.B. with seat belts etc. (Not replaced in 1969, MG 5254 replaced instead)	910
	Replace MG 4991 at Bunda, 7 years old with a mileage of over 80,000 miles. 1 L.W.B. with seat belts etc. for Bunda/Namilombwa/Dzalanyama.	1,050
1972/73	Replace MG 5770 at Regional Office S. Region, 7 years old with a mileage of over 90,000 miles. 1 L.W.B. with seat belts.	1,050
	Replace MG 5724 at Zomba, 6½ years old with a mileage of over 85,000 miles. 1 S.W.B. with seat belts etc.	910
	Replace MG 5544 at Mlanje, 6 years old with a mileage of over 70,000 miles. 1 S.W.B. with seat belts etc.	910

(5) 25/30Cwt. Pick-ups

1970/71	Replace MG 5161 at Zomba, 6 years old with a mileage of over 85,000 miles, 1 30 cwt pick-up with seat belts etc.	1,185
1971/72	Replace MG 5179 at Chigumula, 6 years old with a mileage of over 85,000 miles. 1 30cwt. with seat belts etc.	1,185
1972/73	Nil	

(6) 5 Ton Vehicles

1970/71	Replace MG 5311 at Zomba, 5 years old with a mileage of over 100,000 miles. 1 Ford 5 ton Flat	1,730
	Replace MG 5313 at Luwawa, 5½ years old with a mileage of over 85,000 miles. 1 Ford 5 ton Flat	1,730
1971/72	New Ford 5 ton Flat for Chongoni new forest unit.	1,730
	Replace MG 5242 at Zomba, 7 years old mileage 60,000 miles, heavily worked on logging operations, 1 Ford 5 ton Flat	1,730
	Replace MG 4583 at Dedsa, 10 years old with a mileage of over 100,000 miles. 1 Ford 5 ton Flat	1,730

1972/73	Replace MG 5443 (an obsolete 7 ton logging truck) at Zomba, 6½ years old, heavily worked, mileage 60,000. 1 Ford 5 ton Flat	£ 1,730
	Replace MG 5441 at Dedza, 6½ years old, heavily worked, mileage 60,000. 1 Ford 5 ton Flat.	1,730
	Replace MG 5365 at Bunda, 5½ years old with a mileage of over 85,000. 1 Ford 5 ton Flat.	1,730

(7) Crawler Tractors

1970/71	Nil	
1971/72	Replace MG 5121 at Zomba, 6 years old and 7,000 hours. 1 B.T.D. International tractor, winch to be transferred from old vehicle (saving £525)	2,800
1972/73	Replace crawler tractors at both Zomba and Dedza which will be four years old in 1973. Increased logging operations will probably mean over 7,000 hours for each tractor. No winches required.	5,600

(8) Wheeled Tractors

1970/71	1 new Massey Ferguson tractor for increased hardwood programme Bunda	1,315
	Replace MG 4428 at Ndirande, 10 years old and over 7,000 hours. To be replaced with a Massey Ferguson Industrial Tractor fitted with a 10 ton Boughton Winch. These have proved to be far superior to the wheeled farm tractor in the extraction of timber on relatively flat ground.	2.275
	Replace MG 4220 Fordson Amalika written off 1969 with Massey Ferguson 165	1,315
1971/72	Replace MG 4292 at Chigumula, 11 years old and over 7,000 hours. 1 Massey Ferguson 165	1,315
1972/73	Replace MG 4028 at Dedza, 13 years old and over 7,000 hours. To be replaced with a Massey Ferguson Industrial Tractor fitted with a 10 ton Boughton Winch to be used in extraction of saw logs in selected area.	2,275
	A shovel attachment should be purchased for this tractor, to be used in the upgrading of major forest roads.	750

1972/73 cont.	New Massey Ferguson Industrial tractor with 10 ton Boughton winch for Zomba, to assist in increased logging activities.	£ 2,275

(9) Trailers

1970/71	Replace MG 4451 at Zomba with a Massey Ferguson tipping trailer	300
	1 new Massey Ferguson Tipping Trailer for Bunda	300
1971/72	Replace MG 852 at Mlanje with a Massey Ferguson tipping trailer	300
	Replace MG 887 at Dedza with a Massey Ferguson tipping trailer	300
1972/73	Replace MG 888 at Lilongwe with a Massey Ferguson tipping trailer	300
	Replace MG 851 at Ndirande with a Massey Ferguson tipping trailer	300

(10) Other Plant and Equipment for Attachment to Vehicles

1970/71	1 Atlas Copco Compressor VT4 for road construction Dedza	1,720
	Loading shovel to fit Massey Ferguson Industrial tractor for use on road work at Zomba	750
1971/72	Replace Hayter Mower at Chigumula	200
	Construction of "logging sulky" for use at Zomba	500
	Construction of "logging sulky" for use at Dedza	500
1972/73	Construction of second "logging sulky" for use at Zomba	500
	Improved logging attachments for tractors at Limbe Forests and Chikangawa	1,000

(11) Protective Clothing

1970/71	800 Raincapes at £1 each	800
1971/72	1000 Raincapes at £1 each	1,000
1972/73	1200 Raincapes at £1 each	1,200

A gradual build up of a permanent labour force necessitates an increase in the yearly issue of raincapes.

(12) Fire Fighting Equipment

Jan-Mar 1970	1 Water trailer and 1 Fog Pump ordered 1969 carried over	£ 564
1970/71	1 x 300 gallon water trailer for Chongoni	350
	1 Fog pump for Chongoni	280
	50 new pack pumps to supply new planting areas at Zomba, Ndirande, Chongoni and Dedza. 50 pack pumps at £10 each.	500
	Replacement and spares for pack pumps all stations	200
	spares for fog pumps, all stations	100
1971/72	2 new 300 gallon water trailers, one for Chongoni, one for Bunda	700
	2 new Fog pumps, one for Chongoni, one for Bunda	560
	75 new pack pumps to supply new planting areas at Zomba, Ndirande, Chongoni, Dedza and Bunda. 75 new pack pumps at £10 each	750
	Spares for fog and pack pumps	350
1972/73	3 new 300 gallon water trailers, one for Chongoni, one for Bunda and one for Zomba. 3 at £350	1,050
	3 new fog pumps for Chongoni, Bunda and Zomba new planting areas. 3 at £280	840
	Spares for fog and pack pumps	400

(13) Fire Fighting Communications

Jan-Mar 1970	Telephone equipment ordered 1969 and carried over	56
1970/71	Telephone hand sets, wire, insulators, spindles etc. for all stations	400
1971/72	Telephone equipment as for 1970/71 2 pack set radios and one mains set for Zomba, to maintain a link from the Plateau to Slopes office.	750
	2 pack sets for Dedza, one to Kasamba area plantations with Dedza main office	450
1972/73	1 mains set and 2 pack sets to establish a link between the Regional Office in Lilongwe and Bunda, and an independent link with Dedza	750
	2 pack sets to widen range of communications at Zomba (1) and Luwawa(1)	450
	1 mains set and two pack sets to establish communications between the Regional office in Limbe, Ndirande and Chigumula	750

(14) Polythene Planting Pockets

1970/71	Nil (Sufficient in stock)	
1971/72	1 million at £900 per million	£ 900
1972/73	1 million at £900 per million	900

(15) Cultivating Equipment

1970/71	New discs for ploughs, harrows, tines for subsoilers, spares etc. New disc plough for Bunda	210
1971/72	As for year 1970/71, replacements and spares	200
1972/73	As for year 1971/72, replacements and spares	200

(16) Surveying Equipment

1970/71	Nil (Sufficient in stock)	
1971/72	Replacement of compasses, Abney Levels, chains etc., to maintain the field survey work on all timber plantation units	50
1972/73	As for 1971/72	50

(17) Other Equipment and Special Tools

Jan-Mar 1970	Forest hand tools ordered 1969 and carried over	450
1970/71	1 portable power winch for Dedza mountain extraction	500
	Purchase of tractor saw bench to fit Massey Ferguson 165 for cross cutting of firewood. For use at Amalika and Mtangatanga	300
	Purchase of a potato ridger for use at Zomba. Used on Agricultural plots in accordance with Multiple Land Use schemes.	150
	Special tools including Mansfield Spades, pruning saws, bow saws, cross cut saws, planting trowels, piano wire, felling axes etc. unavailable from M.W.H. stores	300
	1 Petter Diesel engine to replace one written off 1969 Amalika	200
1971/72	Replacement of rock drills at Zomba, Dedza and Mlanje	360
	Purchase of drill steel	100
	Special tools as listed for 1970/71	500

1972/73	Replacement of rock drills as for 1971/72	£ 360
	Purchase of drill steel	100
	Special tools as listed for 1970/71	500

(18) Established Staff

Two upgraded posts and one new post on establishment are noted below at (a) and (b) for 1970/71, but there is an overall reduction in Head 79/1 from £37,735 in 1969 to £24,795 in 1970/71 for established staff, owing to the transfer of 34 posts to the Pulp Project and to Forest Industries, to reflect correctly the numbers and categories of staff employed on each project in 1970/71.

	Jan-Mar 1970	1970/71	1971/72	1972/73
1 Conservator of Forests S6		2,220	2,220	2,220
2 Assistant Conservators of Forests PO		2,147	2,253	2,359
3 Principal Foresters CTO		4,654	4,779	4,905
2 Senior Foresters STO		(a)2,075	2,181	2,287
9 Foresters TO		5,873	6,125	6,372
1 Senior Works Supervisor STO		(a) 972	1,025	1,078
1 Senior Clerical Officer SCO		503	524	525
9 Clerical Officers CO		(c)2,293	2,398	2,442
1 Copy Typist Sec.		185	192	205
2 Foreman Mechanics STA		(b)1,014	1,056	1,098
10 Forest Rangers TA		2,434	2,564	2,702
5 Messengers SC IV		425	425	425
	6,362	24,795	25,742	26,618

(a) Two upgraded posts of one Senior Forester (locally based personnel) from Forester to cover increased responsibilities on logging operations and increased planted acreages at Dedza/Chongoni, and one Senior Technical Officer to be upgraded from Works Supervisor to specialise in logging at Zomba Mountain.

(b) One new post of Foreman Mechanic required at Zomba Mountain for maintenance of vehicles and special logging equipment (the other one is at Dedza). He will assist the Senior Technical Officer in maintenance of specialist equipment, since the latter will have increased responsibilities in respect of logging.

(c) One new Clerical Officer post for new station Chonooni.

(19) Non-Established Staff

	Jan-Mar 1970	1970/71	1971/72	1972/73
Zomba Mountain				
Tend and protect 7,500, 7,750, 8,050, 8,500 acres, including clearing, pruning, fire protection etc. at 23/- per acre.	2,156	8,912	9,257	9,775
Clear fell 100 acres at £5/acre	125	500	500	500
Extract 500,000 cu.ft. of timber and poles at 4d. per cu.ft.	2,083	8,333	8,333	8,333
Replant 100 acres per year at £5/acre, cost includes nursery work and ground preparation	300	500	500	500
Clear indigenous bush for new planting at £5/acre, 250,300 and 450 acres.	-	1,250	1,500	2,250
New planting at £5/acre, 300 (Jan-Mar 1970), 250, 300 and 450 acres.	1,500	1,250	1,500	2,250
	6,164	20,745	21,590	23,608
Ndirande				
Tend and protect 2,130, 2,210 and 2,310 acres, including clearing, pruning, fire protection etc. at 20/-/acre.	500	2,130	2,210	2,310
Replace 130 acres of drought and fire damaged areas at £5/acre	650	-	-	-
Clear indigenous woodland for new planting 80,100 and 70 acres at £5/acre	-	400	500	350
New planting at £5/acre, 100 (Jan-Mar 1970), 80, 100 and 70 acres.	500	400	500	350
Additional clean cultivation of Eucalyptus planting area at £4/acre	200	200	100	100
	1,850	3,130	3,310	3,110

	Jan–Mar 1970	1970/71	1971/72	1972/73
Chigumula/Kanjedza				
Tend and protect 1950 acres at 20/- per acre. Includes pruning, clearing, fire protection etc.	487	1,950	1,950	1,950
Clear fell 10 acres per year at £5/acre	10	50	50	50
Replant 10 acres per year at £5/acre	50	50	50	50
Extract 50,000 cubic feet of timber from Ndirande and 75,000 cubic feet from Chigumula/ Kanjedza at 6d. per cubic foot	781	3,125	3,125	3,125
Raise 200,000 plants per year for sale to public. Costs in the ornamental nursery £5 per 1,000 plants	250	1,000	1,000	1,000
	1,578	6,175	6,175	6,175
Mlanje Mountain				
Maintain and protect 30,000 acres of indigenous vegetation including fire protection of Cedar Forest at 2/- per acre	750	3,000	3,000	3,000
Tend and protect 2,000 acres of plantation including pruning, thinning, fire protection etc. at 20/- per acre	500	2,000	2,000	2,000
Pitsaw and extract 500, 2,500, 3,500 and 4,000 cubic feet of indigenous cedar at 8/- per cubic foot	200	1,000	1,400	1,600
Extract 50,000 cu.ft. of pine logs at 6d. per cubic foot	310	1,250	1,250	1,250
	1,760	7,250	7,650	7,850
Amalika				
Tend and protect 1,000 acres of Eucalyptus plantation at 25/- per acre	310	1,250	1,250	1,250
Replant 50 acres failed area, planting only, nursery work and ground preparation in previous year £4 per acre	200	-	-	-
Extract 10,000, 20,000 and 30,000 cu.ft. of poles at 6d. per cu.ft.	-	250	500	750
	510	1,500	1,750	2,000

	Jan-Mar 1970	1970/71	1971/72	1972/73
Cholomwáni				
Tend and protect 740 acres of hardwood plantation at 25/- per acre	231	925	925	925
Clean cultivation of 200 acres at £4 per acre	200	800	-	-
Extract 5,000, 10,000 and 15,000 cu.ft. of poles at 6d. per cu.ft.	-	125	250	375
	431	1,850	1,175	1,300
Masenjere				
Tend and protect 110,130,230 and 330 acres at 25/- per acre	34	163	288	413
Clear indigenous bush and establish new plantations of 20, 100 and 100 acres per year at £11 per acre.	-	220	1,100	1,100
Planting only of 20 acres in Jan-Mar 1970 at £4 per acre	80	-	-	-
	114	383	1,388	1,513
Dedza Mountain				
Tend and protect 5,000, 5,150, 5,330 and 5,510 acres at 23/- per acre	1,437	5,923	6,129	6,336
Clear and prepare ground for planting 150, 180 acres at £5 per acre	-	750	900	900
New planting at £5 per acre, 30 acres (Jan-Mar 1970), 150, 180 and 180 acres. Includes nursery work etc. except in Jan-Mar 1970 which is planting only at £3 per acre	240	750	900	900
Clear fell 20 acres per year at £5 per acre	25	100	100	100
Replant 20 acres per year at £5 per acre	75	100	100	100
Extract 250,000 cu.ft. of timber per year at 4d. per cu.ft.	1,041	4,166	4,166	4,166
	2,818	11,789	12,295	12,502

	Jan-Mar 1970	1970/71	1971/72	1972/73
Chongoni				
Tend and protect 2,050, 2,850, 3,850 and 4,850 acres at 20/- per acre, including assistance to school plantation area.	512	2,850	3,850	4,850
Clear fell and replant 5 acres/ year at £10 per acre	30	50	50	50
Extract 10,000 cu.ft. of timber per year at 6d. per cuft.	60	250	250	250
Clear 800, 1,000 and 1,000 acres of indigenous woodland prior to new planting at £5 per acre	-	4,000	5,000	5,000
Establish 700 acres Jan-Mar 1970, planting only at £3/acre. 800, 1,000 and 1,000 acres of new plantation at £5 per acre, includes nursery work and ground preparation.	2,100	4,000	5,000	5,000
	2,702	11,150	14,150	15,150
Bunda/Namilombwa/Dzalanyama				
Tend and protect 1,240, 1,440, 1,640 and 1,840 acres at 20/- per acre	310	1,440	1,640	1,840
Extract 50,000 cu.ft. of poles and firewood at 6d. per cu.ft.	312	1,250	1,250	1,250
Clear indigenous bush at Bunda prior to new planting 200 acres per year at £5 per acre	-	1,000	1,000	1,000
Establish new plantation at Bunda 200 acres per year at £5 per acre	-	1,000	1,000	1,000
Protect Dzalanyama water catchment area of indigenous woodland and source of firewood for Lilongwe. 20,000 acres at 1/- per acre.	250	1,000	1,000	1,000
	872	5,690	5,890	6,090
Luwawa				
Tend and protect 10,900 acres of plantation including clearing, pruning, thinning and fire protection at 23/- per acre.	3,134	12,535	12,535	12,535
Chikangawa/Mtangatanga Timber Areas				
Tend 3,000 - 3,450 acres at 20/- per acre, including pruning, thinning.	862	3,000	3,450	3,450

	Jan-Mar 1970	1970/71	1971/72	1972/73
Extraction of 100,000, 120,000 and 130,000 cu.ft. of timber logs at 6d. per cu.ft.	625	2,500	3,000	3,250
	1,487	5,500	6,450	6,700
Nohisi				
Tend and protect 150 acres at 23/- per acre	50	173	173	173
Nyika				
Tend and protect 1,370 acres of plantation at 20/- per acre	342	1,370	1,370	1,370
Experimental Plantations				
Tend and protect 2,500 acres of plantation at 20/- per acre. Trial plots are established in plantation areas above and in other forest reserves.	625	2,500	2,500	2,500
Customary Land Tree Planting Scheme				
Limited operations by Regional Forest Officers on nursery work and distribution of tree seedlings. Approx. 150,000 at £5 per 1,000.	500	750	750	750
Non-Established staff - HQ Payments				
Artisans and other industrial staff who elected to remain on pensionable terms and paid by Ministry's Salaries Division. Reduction in 1972/73 allows for retirements.	2,974	11,897	12,360	11,555

It should be noted that the estimates for the three month period Jan-Mar 1970, cannot always be related to the following 12 month period by a factor of four, as major operations such as planting occour largely within this period and allowances for such operations have been made.

(20) **Maintenance & Running Expenses**

A list of stations receiving funds under this item and the number of powered items of equipment is appended below. A rise in costs of fuel and oils, spare parts etc. necessitates increases under this item. Further increases may occour.

Station		Jan-Mar 1970	1970/71	1971/72	1972/73
S.A.C.F., S. Region	(2)	100	400	400	400
P.F. Zomba Mountain	(21)	1,500	6,100	6,100	6,180
Forester Ndirande	(4)	200	800	800	800
Forester Chigumula	(5)	250	1,000	1,050	1,050
Forester Mlanje Mountain	(4)	200	800	800	850
Forester Amalika	(3)	165	650	700	700
A.C.F., C. Region	(4)	175	600	600	600
P.F. Dedza/Chongoni	(15)	1,150	4,550	4,630	4,680
Forester Bunda	(4)	150	600	600	600
A.C.F., N. Region	(4)	160	600	600	600
P.F. Luwawa	(4)	250	1,200	1,200	1,200
Project Manager, Chikangawa	(4)	200	950	950	950
		4,500	18,250	18,430	18,610

(21) Transport & Travelling

Stations receiving funds are listed below. Funds issued oover both Junior and Senior staff. Items of expenditure to be catered for are, air passages, hospitality allowances, subsistence allowances, mileage claims, holiday grants etc.

	Jan-Mar 1970	1970/71	1971/72	1972/73
Conservator of Forests (0)	275	1,000	1,000	1,150
S.A.C.F., S. Region	125	500	500	600
P.F. Zomba Mountain	187	750	800	850
Forester, Ndirande	30	150	150	175
Forester, Chigumula	25	150	150	150
Forester, Amalika	40	180	180	180
A.C.F., C. Region	50	300	300	300
P.F. Dedza Mountain	87	350	400	450
Forester Bunda	25	100	115	150
A.C.F., N. Region	50	300	300	300
P.F. Luwawa	37	200	200	200
Forester Mlanje Mountain	50	300	300	300
	981	4,280	4,395	4,805

A steady increase occurs as more staff become eligible for allowances etc.

(22) Tools and Materials

Issues as listed. To cover expenditure on items of equipment and materials normally available from Ministry of Works. Funds held by C.F.(0) are to cover bulk purchases of standard items for distribution to stations.

	Jan-Mar 1970	1970/71	1971/72	1972/73
Conservator of Forests (O)	900	4,000	4,250	4,500
S.A.C.F., S. Region	50	200	250	300
P.F. Zomba Mountain	150	600	600	600
Forester Ndirande	50	200	200	200
Forester Chigumula	31	125	125	125
Forester Mlanje Mountain	43	175	200	200
Forester Amalika	25	100	100	100
A.C.F., C. Region	37	150	175	200
P.F. Dedza Mountain	125	500	500	500
Forester Bunda	25	100	100	100
A.C.F., N. Region	25	100	100	100
P.F. Luwawa	50	200	200	200
Project Manager, Chikangawa	75	300	300	300
A.C.F.(M) Vipya	12	50	50	50
Game Ranger, Chelinda Plantations	12	50	50	50
	1,610	6,850	7,200	7,525

(c) Import Content

See separate schedule prepared by Ministry of Natural Resources.

(d) Breakdown of Expenditure by Regions

See schedule attached overleaf.

3. LOCATION OF CONSTRUCTION

Full details of location of construction of buildings and roads are given in Notes on Expenditure; see notes 1, 2 and 3.

Breakdown of Expenditure by Regions

	Jan-Mar 1970			1970/71			1971/72			1972/73		
	S	C	N	S	C	N	S	C	N	S	C	N
Buildings												
Housing	-	-	-	6,650	3,200	-	3,350	4,800	-	2,950	4,000	-
Other Buildings	-	-	-	650	250	-	-	250	-	250	-	-
Roads & Bridges	-	-	-	2,400	2,850	200	2,550	2,550	800	3,000	2,700	600
Plant & Vehicles												
Landrovers	910	-	-	2,100	910	-	1,050	910	1,050	1,960	910	-
25/30cwt Pick-ups	-	-	-	1,185	-	-	1,185	-	-	-	-	-
5 ton vehicles	-	-	-	1,730	-	1,730	1,730	3,460	-	1,730	3,460	-
Crawler Tractors	-	-	-	-	-	-	2,800	-	-	2,800	2,800	-
Wheeled Tractors	-	-	-	3,590	1,315	-	1,315	-	-	2,275	3,025	-
Trailers	-	-	-	300	300	-	300	300	-	300	300	-
Equipment for attachment to vehicles	-	-	-	750	1,720	-	700	500	-	500	500	500
Other Equipment												
Protective clothing	-	-	-	400	200	200	400	300	300	500	400	300
Fire fighting equipment	364	100	100	330	900	200	400	1,660	300	550	1,460	280
Fire fighting communications	30	16	10	200	100	100	850	550	200	950	750	250
Polythene Planting Pockets	-	-	-	-	-	-	350	500	50	350	500	50
Cultivating equipment	-	-	-	60	150	-	60	140	-	60	140	-
Surveying equipment	-	-	-	-	-	-	20	15	15	15	20	15
Other equipment & special tools	250	100	100	650	500	300	400	360	200	400	360	200
Personal Emoluments												
Established staff	3,362	2,000	1,000	13,093	7,207	4,495	13,780	7,330	4,632	13,992	7,886	4,740
Non-Established staff	13,774	7,808	6,329	46,082	35,851	22,454	48,161	38,629	24,721	49,746	39,105	26,030
Running Expenses												
Maintenance & Running Expenses	2,500	1,500	500	10,050	6,150	2,050	10,150	6,230	2,050	10,250	6,310	2,050
Transport & Travelling	632	262	87	2,930	850	500	2,795	975	625	2,955	1,150	700
Tools and materials	849	487	274	4,400	1,750	700	4,475	1,775	950	4,525	1,800	1,200
	22,671	12,273	8,400	97,550	64,203	32,929	96,821	71,234	35,893	100,058	77,576	36,915

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE	:	VIPYA PULPWOOD PLANTATIONS
RESPONSIBLE MINISTRY/DEPARTMENT	:	NATURAL RESOURCES/FORESTRY & GAME
MALAWI DEVELOPMENT ESTIMATES, 1969	:	HEAD 79 ITEM 2
BRITISH AIDED PROJECT NO	:	18
RELATED PROJECTS	:	Nil

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	-	8,600	7,000	6,000	21,600
4 Roads & Bridges	373	2,000	2,400	2,400	6,800
6 Plant & Vehicles	-	7,810	5,270	12,230	25,310
7 Other Equipment	190	9,295	8,180	10,730	28,205
8 Personal Emoluments	19,700	79,123	82,376	83,705	245,204
9 Running Expenses	4,190	16,050	16,505	17,020	49,575
10 Special Expenditure	-	200	-	-	200
TOTAL	24,453	123,078	121,731	132,085	376,894

*21 Houses	-	4,400	5,200	6,000	15,600
22 Other Buildings	-	4,200	1,800	-	6,000

(b) Non-British, Non-Malawi Expenditure

Tree seed, specialised tools, welding gas, explosives, radio and telephone equipment and spares, spares for mechanical equipment, insecticide and fertiliser	110	680	680	680	2,150

(c) Previous Expenditure

		Cumulative Total
1964	9,750	9,750
1965	125,133	134,883
1966	134,966	269,749
1967	135,671	405,520
1968	138,578	544,098
1969 printed estimate	129,260	
1969 revised estimate	111,458	
1969 estimated carry-forward included in Jan-Mar 1970	935	

(d) Source of Finance

U.K. Development Loan

2. PROJECT TARGET

To establish and maintain 54,000 acres of pine plantations and 15,000 acres of eucalypts plantations for pulpwood production .

Estimated Completion Date : 1980

3. BACKGROUND INFORMATION

The original aim of this project, which commenced in 1964, was to create 88,000 acres of pine plantations, in order to make available by 1975 sufficient pulpwood to support a pulp mill with a daily production of 300 tons of air dry pulp.

During late 1967 and in 1968 further information became available from the report made by Messrs. Brown and Root, and from the detailed pulping quality studies on Vipya wood carried out by the South African Pulp and Paper Industries Ltd. (SAPPI) and by T.P.I. London. In consequence the aims and details of the project have been somewhat revised. An integrated pulp/paper mill is now planned producing unbleached Kraft linerboard, fluting and sack paper for the Malawi market and a regional market in surrounding countries. This mill would have a 150 tons per day capacity at start up between 1976 and 1980 and would be capable of expansion to 300 tons per day from 1980 onwards.

Following the information available five years ago, the original mill was to have utilised pine pulpwood only, and for the first few years after production started in 1975 some pulpwood 12 to 13 years old would have been utilised. Recent advice from SAPPI is that, in order to be sure of a high quality product from the start, 14-15 years should be the minimum age at which pine pulpwood should be harvested. In addition SAPPI have advised the admixture of a proportion of eucalypt pulpwood grown on a 6 to 8 year rotation.

Using the above information, together with more precise figures for growth rates, dry wood densities and pulp yields obtained from the various studies, the target acreage for the plantations has been revised. The requirements for a 300 tons per day pulp mill are now estimated at 54,000 acres of pines and 15,000 acres of eucalypts, or a total of 69,000 acres of pulpwood plantations compared with the original 88,000 acres. Further it is expected that at least 10,000 acres of the eucalypts can be planted on the Nkhata Bay lakeshore within 10 to 15 miles of the proposed mill site at Chinteche. This will reduce the haulage distance by more than half for a proportion of the pulpwood travelling to the mill, and this pulpwood can travel to the mill along the Lakeshore Highway.

The area of pine pulpwood plantations already established on the Vipya is 52,000 acres and the area of Eucalyptus pulpwood 1,500 acres, which apart from trial plots has all been established on the Vipya. The 1969/70 planting programme will add 2,000 acres of Eucalyptus sp. mainly on the Vipya, but some planting will take place in the Chinteche area of the Lakeshore.

Application has been made to the United Nations Development Programme for finance for a pre-investment study of the pulp scheme. Arising from this application a Consultant is about to be appointed by the World Bank to undertake a market study. Pending the results of the market study, which should be followed by an engineering study, there is some doubt as to the timing and optimum volume of future pulp/paper production for a viable scheme. It is considered essential, however, that planting must continue at a rate to provide a sustained yield of pulpwood sufficient for a 150 tons per day pulp mill to start production soon after 1975, i.e. by 1977. This will require the continued planting of eucalypts at a rate of not less than 1,000 acres per year up to 1974 (total 7,500 acres).

As regards the target acreage figures for a 300 tons per day mill, it is considered that pending further evaluation of the scheme by the pre-investment study, the target of 54,000 acres of pines and 15,000 acres of eucalypts should be retained to permit this rate of production as from 1980, so as not to jeopardise the scheme assuming the economics are found to justify the earlier concept of 300 tons per day.

To achieve the targets the following planting programme will be required for a sustained yield for a mill of 150 tons per day from 1977 and 300 tons per day from 1980:-

	Pine	Eucalyptus	
Existing acreages	52,000	1,500	
Jan-Mar 1970	-	2,000	Vipya mainly
1970/71	-	1,000	Chisasira, Chinteche and/or Vipya area
1971/72	-	1,000	" " "
1972/73	-	1,000	" " "
1973/74	-	1,000	" " "
1974/75	-	1,000	" " "
1975/76	-	1,000	" " "
1976/80	2,000	5,500	" " "
Completion Acreage	54,000	15,000	

4. PROPOSED WORK 1970/73

The planting programme is given under Background Information in the last paragraph. No further pine planting will be undertaken during the period, but 5,000 acres of eucalypts will be established between 1970 and 1973.

The construction of the necessary roads and buildings for access to and management of these areas will be undertaken by the Department of Forestry and Game.

Maintenance of the plantations, and the supporting roads and buildings will also be carried out, together with fire protection of all plantations and low pruning of pines.

5. JUSTIFICATION FOR PROPOSED WORK

The establishment and maintenance of these plantations will lead to the development of a woodpulp industry in Malawi between 1975 and 1980. This industry will have a major impact on the country's economy, bringing to Malawi a capital investment of £M15 million to £M17 million for the operation of a 300 tons per day kraft pulpmill, adding £M5 million or so annually to the value of the country's domestic exports, or some twentyfive per cent of the present total.

Preliminary feasibility surveys indicate that pulpwood can be produced at a low price and that pulp/paper products canbe supplied to surrounding territories and even it is hoped further afield at competitive prices. Malawi will have a 10 year start on any pulp industries which may be developed in nearby Regional African territories.

This scheme will provide much needed employment in the Northern Region of Malawi, where ample forest land is available for development. It promises to become one of the two largest industrial schemes at present envisaged in the country, the other possibility being Mlanje bauxite.

It is anticipated that the forthcoming pre-investment study will lead to the publication of a business prospectus which will encourage private investment in the future woodpulp industry.

6. EXECUTION AND SUPERVISION

All execution and supervision will be by the Department of Forestry and Game. Supervision by Forestry Department Headquarters, execution by Senior Officer on Development Account.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : VIPYA PULPWOOD PLANTATIONS

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/FORESTRY AND GAME

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 79 ITEM 2

BRITISH AIDED PROJECT NO. : 28

1. PROJECT OFFICER : The Project Manager, Vipya Pulpwood Plantations.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings (M)						
Housing	(1)	-	4,400	5,200	6,000	15,600
Other Buildings	(2)	-	4,200	1,800	-	6,000
		-	8,600	7,000	6,000	21,600
4 Roads & Bridges (M)	(3)	373	2,000	2,400	2,400	6,800
6 Plant & Vehicles						
Landrovers & Piokups	(4)	-	2,080	910	2,500	5,490
5 ton Flats & Tippers	(5)	-	1,730	1,730	1,730	5,190
Tractors	(6)	-	-	2,630	8,000	10,630
Workshop compressor	(7)	-	500	-	-	500
Logging Winch	(8)	-	500	-	-	500
Electricity Supplies	(9)	-	3,000	-	-	3,000
		-	7,810	5,270	12,230	25,310
7 Other Equipment						
Protective clothing	(10)	-	1,000	1,200	1,200	3,400
Fire fighting equipment	(11)	90	3,260	3,260	6,000	12,520
Fire fighting communications	(12)	100	1,115	1,500	1,500	4,115
Cultivating equipment	(13)	-	400	300	300	1,000
Special Tools	(14)	-	900	700	500	2,100
Chemicals & Fertilisers	(15)	-	1,120	1,220	1,230	3,570
Smallholding farm	(16)	-	1,500	-	-	1,500
		190	9,295	8,180	10,730	28,205

Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
8 Personal Emoluments						
Established staff	(17)	4,100	16,753	17,983	18,742	53,478
Non-established staff	(18)	15,600	62,370	64,393	64,963	191,726
		19,700	79,123	82,376	83,705	245,204
9 Running Expenses						
Maintenance & Running Expenses	(19)	3,500	13,500	13,905	14,320	41,725
Transport & Travelling	(20)	260	1,250	1,300	1,400	3,950
Tools and materials	(21)	430	1,300	1,300	1,300	3,900
		4,190	16,050	16,505	17,020	49,575
10 Special Expenditure						
Compensation Chisasira land	(22)	-	200	-	-	200
TOTAL		24,453	123,078	121,731	132,085	376,894

(M) = As costed for construction by Department of Forestry and Game.

(b) Notes on Expenditure

(1) Housing

1970/71	1 DH7 house for Forester Chisasira	£ 4,400
1971/72	1 block Class F labour quarters for 2 families at Vizuzu at £1,200	1,200
	2 blocks Class F labour quarters for 4 families at Chisasira at £1,200	2,400
	2 EH6 houses for junior staff at £800	1,600
1972/73	2 blocks Class F labour quarters for 4 families at Simila at £1,200	2,400
	2 blocks Class F labour quarters for 4 families at Luzima at £1,200	2,400
	1 block Class F labour quarters for 2 families at Chiole at £1,200	1,200

(2) Other Buildings

1970/71	1 Office/store/garage/workshop block Chisasira	1,500
	1 petrol/oil store Chisasira	250
	1 store for workshops at Chikangawa	750
	1 water scheme for Vizuzu compound	500
	1 Dispensary/Maternity block Chikangawa (essential for large isolated labour force)	1,200

1971/72	1 Office/store/garage/workshop block at Vizuzu	£ 1,500
	1 fire tower at Chisasira	250
	Improve water supplies Chisasira	50
1972/73	Nil	

(3) Roads and Bridges

Jan-Mar 1970	Improvement of Champoyo-Mazamba road, improvement of side drains and insertion of two cross culverts	240
	Complete "link up" of Nthungwa Hill road for fire access, .75 miles at £150 per mile and 2 culverts at £10 each	133
1970/71	10 miles of new road for new Eucalypt planting area at Chinteche at £200 per mile	2,000
1971/72	10 miles of new road for new planting area at Chinteche at £240 per mile	2,400
1972/73	10 miles of new road for new planting area at Chinteche at £240 per mile	2,400

(4) Landrovers and 30 cwt Trucks

1970/71	Replace MG 5342, 4 years old with a mileage of 80,000 plus. 1 L.W.B. with seat belts and two tanks (extra)	1,170
	1 new S.W.B. Landrover for Forester Chintechc, new station and new post. 1 S.W.B. with seat belts etc.	910
1971/72	Replace MG 5543, 5½ years old with a mileage of over 80,000 miles. 1 S.W.B. with seat belts etc.	910
1972/73	Replace MG 5722, 5½ years old with a mileage of 80,000 plus. 1 L.W.B. station wagon with seat belts and two tanks	1,315
	Replace MG 5926, 5 years old with a mileage of 80,000 plus with new Ford 30 cwt. pick-up	1,185

(5) 5 ton Vehicles

1970/71	Replace MG 5025 5 ton tipper with 5 ton Flat, 5 years old with mileage of 80,000 plus. One 5 ton Flat at £1,730	1,730
1971/72	Replace MG 4711, 7 years old with mileage of over 80,000 miles. One 5 ton Flat at £1,730	1,730
1972/73	Replace MG 5026, 7½ years old with mileage of over 80,000 miles. One 5 ton Flat at £1,730	1,730

(6) Tractors

1970/71	Nil	
1971/72	Replace MG 4551, 9 years old and an obsolete model, with a Massey Ferguson 165	£ 1,315
	Replace MG 4554, 10 years old and an obsolete model with a Massey Ferguson 165	1,315
1972/73	Replace D4 Crawler Tractor, 9 years old, with new D4	8,000

(7) Workshop Compressor

1970/71	One workshop compressor required for mechanical maintenance operations at Chikangawa, for use by Mechanical Supervisor in repairing vehicles, tractors, plant.	500
1971/72	Nil	
1972/73	Nil	

(8) Logging Winch

1970/71	A Boughton 10 ton logging winch to fit a Massey Ferguson 165 tractor. A new item of equipment to be used for removing felled indigenous trees on the new Eucalyptus planting area at Chintechе	500
1971/72	Nil	
1972/73	Nil	

(9) Electricity Supplies

1970/71	Install electric generators, engine houses and complete the necessary cables and wiring for electricity supplies to 12 senior staff houses situated at Chikangawa, Champoyo, Mazamba, Nthungwa, Lusangazi and Chisasira.	
	One 3 KV generating set	400
	Five 1½ KV generating sets at £200	1,000
	Six engine houses at £75	450
	Overhead cable and wiring	1,150
1971/72	No further provision made at this stage. To be reviewed after developments 1970	Nil
1972/73	No further provision at this stage. To be reviewed after developments 1971.	Nil

(10) Protective Clothing

1970/71	1,000 Raincapes at £1 each	£ 1,000
1971/72	1,200 Raincapes at £1 each	1,200
1972/73	1,200 Raincapes at £1 each	1,200

It is essential that raincapes are provided to the permanent labour force, a gradual increase in labour force is to be expected as the total planted acreage increases.

(11) Fire Fighting Equipment

Jan-Mar 1970	Cost of Pack pumps carried forward	90
1970/71	100 new Pack pumps at £10 each	1,000
	Purchase of Pack pump and Fog pump spares.	400
	3 x 300 gallon water trailers at £350 each	1,050
	Purchase of 3 Fog pumps	810
1971/72	100 new Pack pumps at £10 each	1,000
	Purchase of Pack pump and Fog pump spares.	400
	Purchase of 3 Fog pumps at £270 each	810
	Purchase of 3 x 300 gallon water trailers at £350	1,050
1972/73	As in 1970/71, more sophisticated fire fighting equipment must be purchased if the fire danger is to be countered. A minimum requirement is that stated for 1970/71, but motorised bowsers with delivery pumps will be essential.	6,000

(12) Fire Fighting Communications

Jan-Mar 1970	Cost of telephone equipment carried forward.	100
1970/71	6 telephone hand sets at £15 each	90
	1 relay radio mains set with manual or automatic operation for links between Chikangawa and Lusangadsi and Chikangawa and Masamba and Chinteche	750
	1 Pack/Landrover radio set FM1OPN, for Forester Chinteche at £225	225
	Batteries, spares for radio sets	50
1971/72	Extension to internal communications in all stations, including purchase of a second relay station and pack sets	1,500
1972/73	Replacement of sets and extension of communications will be essential	1,500

(13) Cultivating Equipment

1970/71	New discs for ploughs and harrows, new subsoiler tines, spares etc.	£ 400
1971/72	As for 1970/71	300
1972/73	AS for 1970/71	300

(14) Special Tools

1970/71	Surveying equipment, planting spades, pruning saws, bill hooks, slashers, felling axes etc. unavailable from Ministry of Works. (includes additional tools for pruning)	900
1971/72	Purchases of pruning saws, bill hooks and slashers to cover increased pruning programme. Other purchases as normal.	500
	Purchase of Hayter Motor Mower	200
1972/73	As for 1970/71	500

(15) Chemicals and Fertiliser

1970/71	Fertiliser for application to Eucalyptus plants in the field and for boosting nursery stock. 32 tons at £35 per ton (1,000 acres).	1,120
1971/72	Purchases as for 1970/71 with price increase and additional handling charges allowed.	1,220
1972/73	As for 1971/72 with small price increase allowed	1,230

(16) Small Holding Farm

1970/71	Establish small holding farm to supply milk, eggs and vegetables, including potatoes. Produce to be sold as part of multiple land use project. After initial capital outlay it is hoped the farm will be self-supporting from revenue earned.	1,500
1971/72	No provision made at this stage but further capital expenditure may be required.	
1972/73	No provision made at this stage but further capital expenditure may be required.	

(17) Established Staff

	Jan-Mar 1970	1970/71	1971/72	1972/73
1 Project Manager S.9		1,950	1,950	1,950
2 Principal Foresters CTO		2,947	3,025	3,088
1 Senior Forester STO		1,011	1,064	1,117
6 Foresters TO		3,214	3,358	3,518
1 Senior Mechanical Supervisor STO		1,011	1,064	1,117
1 Executive Officer EO		571	593	615
9 Clerical Officers CO		1,501	1,585	1,688
1 Copy Typist D6/5		186	193	206
23 Forest Rangers TA		4,362	5,151	5,443
TOTAL	4,100	16,753	17,983	18,742

In 1970/71 the following changes in establishment are made. The number of senior staff previously charged to the scheme, i.e. 1 Project Manager, 2 Principal Foresters, 1 Forester, 1 Mechanical Supervisor, 1 Executive Officer, 2 Clerical Officers and 6 Forest Rangers - total 14, are to be increased to 44 as listed in the above table, thus causing an increase in staff salaries of some £9,000 (£7,797 in 1969 to £16,753 in 1970/71). The additional staff shown are, except for 6 new posts (see below) transferred from the Timber Plantations scheme (Head 79/1, British Development Aid), where there is a corresponding reduction in staff salaries to be paid in 1970/71 after transfer of staff to Vipya Pulp and to Forest Industries . The additional staff were originally recruited under the Timber Scheme and the posts existed under that scheme when the Pulp Scheme began in 1964 with 9,000 acres of existing plantations. In 1970/71 the status quo in respect of the staff engaged on each of the two British Development Projects will be correctly established.

New Posts 1970/71 Six new posts are required as follows:-

One additional Forester (TO) to make 7 Foresters in all, one of which is to be upgraded to Senior Forester to be in charge at Lusangazi, where there are 10,000 acres of softwoods with older plantations requiring highly skilled management, and also a small hardwood programme to produce timber and poles, which this officer has to manage in addition to his other duties. The upgraded STO post is listed above, leaving total six Foresters in 1970/71.

The distribution of Senior Forester and Forester staff will then be: One Forester on afforestation at Chisasira, one Senior Forester and five Foresters maintaining 55,000 acres of plantations. They will be responsible to 2 Principal Foresters and the Project Manager, but one of the two Principal Foresters will have to take on sawmilling at Chikangawa in addition to his other duties. It should be appreciated that the majority of Foresters on the scheme are not yet highly experienced and need the guidance of experienced senior technical officers.

Two additional Clerical Officers (CO) to make 9 in all. Required for office work at seven main stations, with a total of 3 at the HQ of the Scheme at Chikangawa.

Three additional Forest Rangers (TA) to make 23 in all. 22 required for 55,000 acres (2,500 acres each), plus 1 on afforestation.

1971/72	No further staff proposals at this stage, though further clerical staff may be necessary.
1972/73	Remarks as for 1971/72. An additional Forest Ranger may be required.

Growth of the scheme at 1,000 acres per year must allow for an increase in both technical and administrative staff. Although the planting programme has been reduced, the degree of technical supervision required for the plantations will increase as large acreages become due for first pruning. An adequate distribution of both senior and junior staff is also required for prompt action in the event of fire.

(18) Non-Established Staff

Jan-Mar 1970	Continuation of 1969/70 planting programme, 1,000 acres of Eucalyptus sp. at £8 per acre.	£ 8,000
	Of the tending operations, only weeding and grass cutting take place during this period, 9,250 acres at 10/- per acre	4,625
	Application of fertiliser to 1,500 acres of Eucalyptus sp. at 15/- per acre.	1,125
	Other operations during this period, including station maintenance, roads maintenance, building maintenance and welfare overheads.	1,850
1970/71	Maintain and protect 55,500 acres, including weeding and fire protection, station maintenance, road maintenance, building maintenance and essential welfare overheads at average 16/- per acre.	44,400
	Establishment of 1,000 acres of Eucalypts at £15 per acre. Nursery, ground clearing, ground cultivation and pitting and planting. Higher average cost due to density of forest to be cleared on Lakeshore.	15,000
	First pruning of pines, essential for access in case of fire and for management for pulp production 3,955 acres at 13/6 per acre.	2,670
	Labour for smallholding/farm for milk, eggs and vegetables, including potatoes. Produce to be sold as part of multiple land use project.	300
	NB Farm labour is a recurrent charge but no provision has been made for 1971/72 or 1972/73, on the assumption that a revolving account will be opened. Some future provision may be required.	
1971/72	Maintain and protect 56,500 acres, including weeding and fire protection, station maintenance, road maintenance, building maintenance and essential welfare overheads at average 16/- per acre.	45,200

	Establish 1,000 acres at £15 per acre	£ 15,000
	Pruning pines 5,872 acres at 13/6 per acre	3,963
	Land surveys for planting	230
1972/73	Maintain 57,500 acres at 16/- per acre	46,000
	Establish 1,000 acres at £15 per acre	15,000
	Pruning pines at 13/6 per acre 5,531 acres	3,733
	Land surveys for planting	230

It is impossible to reduce total maintenance costs on increasing acreages, and the total funds required have also been increased by the need to prune relatively large acreages. First prunings only of pines are charged to the pulp scheme, second and subsequent prunings if required are charged to the timber scheme (79/1). The future of the Vipya scheme has not yet been decided, and it is essential that if the pulp scheme is deferred until a date later than 1975, utilisable saw logs are available to feed a large sawmill, thus recouping some of the capital outlay on the scheme.

(19) Maintenance and Running Expenses

Jan-Mar 1970	Funds required to operate and maintain 10 Landrovers, 10 five ton Flats, 19 tractors, 1 D4 Caterpillar Tractor, 1 Wakefield grader, 2 Farmer Graders, 19 trailers, various station and portable engines, and mairtain ploughs, harrows, subsoilers etc.	3,500
1970/71	As above with a reduction of the number of tractors in use because the programme of mechanical cultivation is reduced as a result of the curtailed planting programme. Includes essential welfare transport.	13,500
1971/72	As above with a small increase for expanding scheme.	13,905
1972/73	As above allowing for expanded acreage of scheme.	14,320

(20) Transport and Travelling

Jan-Mar 1970	To cover all senior and junior staff mileage allowances, subsistence allowances, holiday grants etc.	260
1970/71	As above. The majority of leave and therefore holiday grants are taken in the period April-July; travelling increases considerably during the fire season; the figure quoted for the first quarter of the year cannot therefore be related to a 12 month period.	1,250

1971/72	As above. Expansion of Chintechе plantations necessitates more frequent visits by senior staff; this plus increase in number of staff eligible for holiday grants etc. give a slight increase in funds required.	£ 1,300
1972/73	Increase required for similar reasons given in year 1971/72.	1,400

(21) Tools and Materials

Jan-Mar 1970	The purchase of tools and materials purchased locally from Ministry of Works and Housing and locally in Malawi. The purchase of fertiliser is included under other equipment.	430
1970/71 1971/72 1972/73	As for Jan-Mar 1970. for each year.	1,300

(22) Special Expenditure

1970/71	Compensation payments to displaced villagers in the Chintechе planting area.	200

(c) Import Content

See separate schedule prepared by Ministry of Natural Resources.

(d) Breakdown of Expenditure by Region

All Northern Region.

3. LOCATION OF CONSTRUCTION

All Northern Region and all works to be carried out by Department of Forestry and Game.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE	:	SAWMILLING
RESPONSIBLE MINISTRY/DEPARTMENT	:	NATURAL RESOURCES/FORESTRY & GAME
MALAWI DEVELOPMENT ESTIMATES 1969	:	HEAD 79 ITEM 3
BRITISH AIDED PROJECT NO.	:	32
RELATED PROJECTS	:	TIMBER PLANTATIONS

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings *	2,500	14,250	9,800	3,500	27,550
4 Roads & Bridges	-	1,500	1,500	-	3,000
6 Plant & Vehicles	-	1,200	2,000	1,750	4,950
7 Other Equipment	6,273	5,150	8,800	7,200	21,150
TOTAL	8,773	22,100	22,100	12,450	56,650
*21 Houses	-	5,000	3,200	-	8,200
22 Other Buildings	2,500	9,250	6,600	3,500	19,350

(b) Non-British, Non-Malawi Expenditure

Category	Jan-Mar 1970	1970/71	1971/72	1972/73
Welding Gases	50	100	25	100

(c) Previous Expenditure

		Cumulative Totals
Up to 31.12.65	14,799	14,799
1966	9,965	24,764
1967	17,839	42,603
1968	32,841	75,444
1969 Printed Estimates	35,540	
1969 Revised Estimates	30,540	

1969 Estimated carry forward of £3,705 included within Jan/Mar 1970 estimate above. It is not yet known whether a carry forward from Jan-Mar 1970 into 1970/71 will be necessary owing to possible late arrival of kiln machinery.

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

The aim of this project is to develop capital facilities at Government sawmills so that local timber supplies make the maximum contribution to reducing imports and, where practicable and desirable, contribute also toward export earnings.

Expected Completion Date

As the yields from Government plantations grow, further capital will be required and a final completion date is not anticipated within the present Development Plan period.

3. BACKGROUND INFORMATION

In 1963 the decision was made that sawmilling of timber from Government plantations should be undertaken by the Department of Forestry and Game. At that time the Department possessed only the Blantyre sawmill. Since then additional mills have been built and equipped at Zomba, Dedza and Chikangawa (Vipya).

Since 1967 Canadian sawmilling equipment (a gift from the Government of Canada) has been installed at the Zomba mill, and installation of similar equipment is almost complete at the Dedza mill. The new Zomba mill is in full production but still lacks facilities for kiln seasoning, seasoned timber storage and housing. The new Dedza mill will be in production before the end of 1969, but will still require storage facilities and housing. The Blantyre mill is being reorganised to reduce operating costs and to permit increased earning capacity from local hardwood supplies. A small mill is in operation at Chikangawa.

Past production from the sawmills with forecasts for the ensuing years is given below.

Year	Total Sales
1964	£ 33,000
1965	74,750
1966	103,911
1967	130,166
1968	218,109
1969	250,000 (estimate)
1970/71	270,000 (forecast)
1971/72	292,000 (forecast)*
1972/73	317,000 (forecast)*

* These figures do not include additional production if a mill is opened on Chambe plateau, Mlanje.

4. PROPOSED WORK 1970/73

1970 (Jan-Mar) Complete installation of kiln seasoning facilities at Zomba Sawmill. (Kilning is essential to provide timber of a suitable moisture content for service in drier areas - particularly Lilongwe, the Lakeshore and the Lower River, and it also obviates the need for air seasoning which locks up capital in sawn timber stocks and seasoning sheds).

1970/71 The provision of timber storage sheds at Lilongwe for the new Capital, and at Mzimba, where production from the Chikangawa mill (now reaching 50,000 cu.ft. of sawn timber per annum) is being air seasoned prior to sale. Additional timber storage for sales of seasoned timber at Zomba and Blantyre is required together with a mill office for records/accounts/sales at Zomba.

Dry mill machinery for hardwood manufacture at Blantyre (local and export orders) plus simple resaws at Zomba and Dedza for resawing to customer requirements after seasoning. Provision for a Glulam plant at Blantyre sawmill, as a means of converting short lengths and lower grades of softwood timber to a more readily saleable, high value product.

Housing is required for mill staff at Zomba and Dedza. This was previously shelved in the efforts to get the new mill into production as quickly as possible. Some operating staff are required to be housed on site for kiln operations and minimum fire crew duties.

Provision is made for the tarring of the steep entrance and railway crossing into Blantyre mill, which carries heavy traffic and gives continual erosion and bogging down problems in the rains.

1971/72 Provision is made for further housing at Zomba and Dedza and for further timber storage sheds at Blantyre and Zomba. The metalling or gravelling of the sales yard at Zomba will be carried out, (a large area of this must consolidate thoroughly during 1970 before this is done).

The building of kilns, purchase and installation of kiln equipment and a boiler at Dedza mill is planned for this period. The actual design of the kilns has not yet been finalised but will in all probability be similar to those under construction at Zomba.

1972/73 Ways and means of increasing timber production in the period 1970-75 are continually under review. There is also a levelling off in normal softwood yields from now until 1973/74. This deficiency might be met by an operation to clear fell all plantations (1500 acres) on Chambe Plateau, Mlanje, over, say, a period of 5 years, writing off all capital mill costs over the same period. Chambe is doubtfully economic as a long term production unit due to its inaccessibility and small plantation area incapable of further extension.

Footnote It must be emphasized that, under present conditions, the timber industry in Malawi is young and has expanded quite rapidly. The search for additional raw material, increased production and new markets and processes has to be continuous if the industry is to play its maximum part in reducing imports. Under these conditions detailed plans required at a fixed moment of time, and covering a period of 18 months ahead, cannot be precise and should not be considered inflexible. Snags over power supplies, site and machinery problems and fresh process or market information must dictate the emphasis on the various aspects of mill development and production.

5. JUSTIFICATION FOR PROPOSED WORK

The sawmilling project provides new capital expenditure for the development of the sawmilling industry, the aims of which, and past and future estimated sales, have been given in sections 2 and 3 above. The Sawmills operate on a commercial basis under a specific Treasury Fund and the surplus funds are sufficient to cover the depreciation charges raised by existing and new capital investment, plus a profit margin.

The steady increase in total sales for this industry would not be possible without the injection of new capital in the form of machines and better operating facilities, and development work must continue if this trend is to be maintained.

6. EXECUTION AND SUPERVISION

Supervision by staff at Forestry Department Headquarters and execution by Technical Officers of the Department at each sawmill.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : SAWMILLING

RESPONSIBLE MINISTRY/DEPT. : NATURAL RESOURCES/FORESTRY AND GAME

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 79 ITEM 3

BRITISH AIDED PROJECT NO. : 32

1. PROJECT OFFICER : Senior Assistant Conservator, Forest Industries Division

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings(M)						
Housing	(1)	-	5,000	3,200	-	8,200
Other Buildings	(2)	2,500	9,250	6,600	3,500	19,350
		2,500	14,250	9,800	3,500	27,550
4 Roads & Bridges(M)	(3)	-	1,500	1,500	-	3,000
6 Plant & Vehicles	(4)	-	1,200	2,000	1,750	4,950
7 Other Equipment						
Kiln Machinery	(5)	6,273	500	8,800	-	9,300
Woodworking machinery	(6)	-	4,650	-	7,200	11,850
		6,273	5,150	8,800	7,200	21,150
TOTAL		8,773	22,100	22,100	12,450	56,650

(M) - As costed, designed and to be built by Dept. of Forestry and Game, except for housing which is to be built to agreed Ministry of Works designs.

(b) Notes on Expenditure

General

(i) The following general points should be made. One is that the seasoning sheds and ancillaries for the two new mills at Zomba and Dedza have proved a good deal more expensive than had been originally estimated. This has resulted in certain other items originally in 1969 estimates being carried forward to 1970/71. it is also apparent that, in the past two years housing for mill operatives has lagged behind the building and equipping of the actual mills. Housing is required on site for overtime working, kiln running (a 24 hour operation) and in order to have a small force of men at the mill for fire fighting operations.

(ii) A further consideration is the proposal to take over Government supplies of imported softwood timber at present handled by Ministry of Works Stores Branch. This has been agreed by Stores Branch but cannot be finalised in detail immediately. This change over requires some capital works in timber sheds at Lilongwe and Blantyre, which are provided for in this project.

(iii) Provision has been made in 1971/72 for the building and installation of kilns at Dedza, but this could be deferred if sufficient data on operating costs etc. of the new Zomba kilns is not available by the end of 1970. In 1972/73 preliminary provision has been made for a sawmill at Mlanje. A plan is being examined for clear felling all the 1,500 acres of softwood on Chambe Plateau in order to push up local timber supplies in the period 1972-1977. This might be brought forward to 1971/72 after further investigation.

(1) Housing

1970/71	Dedza mill 2 EH (£1600) and 1 block F quarters (£1200) with water supply (£200) for Mill Foreman, Clerical Officer (Timber stocks/sales) and two sawyers.	£ 3,000
	Blantyre Mill 1 EH (£800) and 1 block F quarters (£1200) to house Kiln operator and Watchmen. Blantyre City housing regulations - these men are required on site and proper houses have to be provided.	£ 2,000
	Total 1970/71	£ 5,000
1971/72	Further housing mill staff Zomba and Dedza.	£ 3,200

(2) Other Buildings

1970	Zomba mill Completion Kiln building.	£ 2,500
1970/71	Lilongwe timber depot Extension of sales sheds to cope with imported timber.	£ 1,500
	Mzimba timber depot Small shed already available but not large enough to cope with local softwood outturn 1970 onwards from Chikangawa sawmill. Sheds and sawmill office.	£ 2,000
	Zomba mill Office to control mill, timber records and sales at £80,000 to £100,000 p.a. (£1,000). Toilet facilities required by Factories Act (£250). Extension of sales shed to complete construction begun in 1969 (£1500).	£ 2,750
	Blantyre mill Timber storage/sales sheds to improve handling, reduce recurrent costs which are particularly high at this mill.(To be completed 1971/72).	£ 3,000
	Total 1970/71	£ 9,250

Other Buildings cont.

1971/72	Blantyre mill Completion of timber sheds/storage facilities.	£	2,000
	Zomba mill Dry mill shed	£	1,000
	Dedza mill Construction of Kiln buildings.	£	3,600
	Total 1971/72	£	6,600
1972/73	Buildings in connection with possible Mlanje mill.	£	3,500

(3) Roads & Bridges

1970/71	Tarring entrance and railway crossing Blantyre mill. This area receives heavy traffic, has a steep section and always gives great difficulties in the rains.	£	1,500
1971/72	Metalling or gravelling of sales yard Zomba mill.	£	1,500

(4) Plant & vehicles

1970/71	Purchase of new 25cwt general sawmill duties Zomba mill (Mill Supervisor's vehicles)	£	1,200
1971/72	Purchase of new tractor/trailer Zomba mill mainly for moving sawdust and mill waste.	£	2,000
1972/73	Transport in connection with possible Mlanje mill.	£	1,750

(5) Kiln Machinery

1970	Completion of purchases boiler, piping, conveyor belting, Kiln equipment etc. for Kilns at Zomba mill.	£	6,273
1970/71	Commissioning (local) charges for Kiln installation by Wells Ltd. of United Kingdom.	£	500
1971/72	Purchase of boiler, piping, Kiln equipment etc. for Dedza mill, and commissioning of Kilns.	£	8,800

(6) Woodworking Machinery

1970/71	Provision for purchase and installation of Glulam line in Blantyre Mill (£750). Purchase and installation of woodworking machinery including a thicknesser, mortiser and dovetailer for increasing remanufacture including exports, and resaws for Zomba and Dedza (£3900).		
	Total requirements	£	4,650
1972/73	Sawmill machinery for possible Mlanje mill.	£	7,200

(c) Import Content

See separate schedule for Ministry of Natural Resources.

(d) Breakdown of Expenditure by Region:

	1970			1970/71			1971/72			1972/73		
	S	C	N	S	C	N	S	C	N	S	C	N
Buildings	2500	-	-	7750	4500	2000	4600	5200	-	3500	-	-
Roads & Bridges	-	-	-	1500	-	-	1500	-	-	-	-	-
Plant & Vehicles	-	-	-	1200	-	-	2000	-	-	1750	-	-
Other Equipment	6273	-	-	5150	-	-	-	8800	-	7200	-	-
TOTAL	8773	-	-	15600	4500	2000	8100	14000	-	12450	-	-

3. LOCATION OF CONSTRUCTION

All work is at the Blantyre, Zomba and Dedza sawmills and Lilongwe and Mzimba timber sales depots except for the tentative 1972/73 programme which is concerned with the proposed sawmill at Mlanje.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	:	DEVELOPMENT OF WILDLIFE RESOURCES
RESPONSIBLE MINISTRY/DEPARTMENT	:	NATURAL RESOURCES/FORESTRY AND GAME
MALAWI DEVELOPMENT ESTIMATES, 1969	:	HEAD 79 ITEM 6
BRITISH AIDED PROJECT NO.	:	34
RELATED PROJECTS	:	None

1. FINANCIAL SUMMARY

(a) Funds requested

Category	Jan--Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	600	16,450	14,550	10,000	41,600
3 Water Supplies	nil	750	1,000	1,000	2,750
4 Roads & Bridges	nil	700	550	2,500	3,750
5 Other construction	150	1,100	nil	1,000	2,250
6 Plant & Vehicles	nil	6,575	6,900	1,500	14,975
7 Other equipment	1,000	4,620	1,500	1,500	8,620
8 Personal Emoluments	2,325	13,180	18,300	19,300	53,105
9 Running expenses	1,925	10,690	14,000	15,000	41,615
10 Special expenditure	nil	2,000	4,000	2,000	8,000
TOTAL	6,000	56,065	60,800	53,800	176,665
*21 Houses	600	9,250	9,300	5,000	24,150
22 Other buildings	nil	7,200	5,250	5,000	17,450

(b) Non-British, Non-Malawi Expenditure

Vehicles	nil	1,500	3,000	nil	4,500

Three VW Kombi Clippers are required as game viewing vehicles for tourists (one in 1970/71 and two in 1971/72). These are of West German origin. Experience in Africa has shown these particular vehicles to be the best for game viewing because they have an aircooled engine and are otherwise suitable (good in sand, sliding roof for photography, convenient size). Vehicles with water cooled engines boil when driven long distances at the very low speeds (2-5 miles/hour) often necessary. U.K. alternatives have been investigated and none found sufficiently suitable from all the aspects mentioned above.

(c) Previous Expenditure

		Cumulative Total
to 31.12.67	27,951	27,951
1968	16,074	44,025
1969 Printed Estimates	23,100	
1969 Revised Estimates	23,100	
1969 Estimated carry-forward	nil	

(d) Source of Finance

U.K. Development Loan

2. PROJECT TARGET

To conserve and develop the wildlife resources of Malawi with the object of converting them into a revenue earning, educational and aesthetic asset by:-

(a) establishing and administrating national parks and game reserves to conserve wildlife;

(b) the development of the wildlife resources of Malawi as a game viewing tourist attraction;

(c) practical research to ensure that the basic resource (wildlife) is maintained and increased in relation to its habitat in the national parks and game reserves;

(d) to examine protein production possibilities from wildlife.

Expected Completion Date

Continuing project. To be transferred to Revenue Account as soon as possible.

3. BACKGROUND INFORMATION

Since 1963, the conservation of wildlife in Malawi has been the responsibility of the Department of Forestry, then renamed the Department of Forestry and Game. There are now three national parks - the Nyika National Park in the Northern Region, the Kasungu National Park in the Central Region, and the Lengwe National Park in the Southern Region. There are also three game reserves - Nkhotakota Game Reserve in the Central Region, and the Majete and Mwabvi Game Reserves in the Southern Region. Two further game reserves are planned with the object of raising them to national park status as soon as possible; these areas aresituated in the Vwaza/Kazuni area in the Northern Region and the Liwonde/Lake Malombe area in the Southern Region, respectively,

Senior wildlife conservation staff at present consist of one Chief Game Warden at the Department's headquarters (appointed late 1969), one Game Ranger in the Northern Region, two Game Rangers in the Central Region and two Game Rangers in the Southern Region. There is one Wildlife Biologist, based in the Kasungu National Park, who only started work in 1969.

Development to date, and future planning, have been based on the now internationally accepted prinoiple that wildlife is a potentially valuable national asset that must be conserved on economic, educational, scientific and aesthetic grounds. However, development in the national parks and game reserves up to 1968 has, perforce, neglected three main aspects - research, staff housing, and staff training. Research is essential if the habitat is to be managed so as to increase the wildlife populations and to prevent degradation of vegetation. Staff training and adequate housing for key junior staff are vital to enable the recruitment and retention of staff capable of looking after tourists properly and carrying out their other duties intelligently.

The rapidly increasing scope, complexity and tempo of wildlife conservation measures in Malawi, closely linked with the development of the country's tourist industry, has necessitated major re-organisation of the Forestry and Game Department aimed at creating an autonomous, specialist wildlife conservation division of the Department. The first step towards this objective was the appointment (at the end of October 1969), at the Department's Headquarters, of a Chief Game Warden who has taken over the responsibility for all wildlife conservation and development work which was previously handled by the Conservator of Forests (Management). With the starting of this new specialist Division, strengthening of wildlife conservation staff on the administrative side will become a matter of priority.

4. PROPOSED WORK 1970/73

1970/71 Further development during this period is to be concentrated mainly upon Kasungu and Lengwe National Parks, because of their accessibility for tourists. Air Malawi are intending to operate Islander aircraft to Kasungu in 1970 on a scheduled stop basis, and Lengwe is already included in organised day tours from Blantyre. The existing Kasungu camp is to be expanded from 6 to 9 rondavels, and catering facilities provided plus transport within the Park for air tourists. Facilities for day visitors to Lengwe are to be improved by the serving of beer and cold drinks in well shaded pleasant surroundings. Further toilet facilities and a new game viewing hide at Lengwe have also been included. Radio communications are required for bookings and general administration. These proposals are regarded as essential to make use of existing facilities.

Research requirements are a small laboratory at Kasungu, two field assistants and junior staff housing. Research work will concentrate on habitat studies leading to management plans. Research work in 1969 has already indicated a vital need for fire control measures to increase carrying capacity and provision has been made accordingly for fire control operations. Further vehicles are required for such fire control measures involving transport of staff and materials.

Conservation - staff requirements for protection and for camp duties have expanded considerably. The new proposed Liwonde/Lake Malombe and Vwaza/Kazuni Game Reserves and essential extensions to the Lengwe National Park require basic anti-poaching protection immediately if they are to survive as wildlife areas. It is impossible to recruit or retain extension staff of the necessary calibre required for this arduous and exacting work unless they can be offered housing equivalent to that which they could obtain in other employment. Housing of this standard does not exist in rural areas where conservation extension staff must live.

Administration - In line with experience in all parts of Africa where wildlife is conserved as a national asset, it is clearly apparent that there is a very real and urgent long-term need to strengthen the Game Division's administrative staff at headquarters. At the moment there is no one to relieve the Chief Game Warden should the latter be absent on duty, sickness or leave, while for all clerical and minor administrative duties he has to rely on part-time assistance of Forestry Division staff - if and when such assistance can be provided after the priorities of Forestry work have been met. The present situation is not merely unsatisfactory but potentially dangerous, for it inevitably means that in any emergency Forestry Division staff must be saddled with work and responsibilities with which, at the best, they are not fully familiar and, at the worst, of which they are completely ignorant. To overcome this problem it is proposed to create a new S.T.O. post of Game Warden (Headquarters) who will act as field and administrative assistant to, and stand-in for, the Chief Game Warden, an arrangement which has long been common practice in the game departments of East and Central Africa.

Training has been provided for by funds for the operation of an initial 18 week course for Game Scouts and Game Guards. The training programme is to be continued and expanded by the sending of selected Game Scouts and others to the College of African Wildlife Management at Mweka in East Africa. The latter training is aimed at the appointment of suitably qualified Malawi citizens to higher grade posts in the Game Division, all of which are filled by expatriates at the present.

1971/72 and 1972/73

Work in these years provides for an additional professional biologist with supporting facilities, and a continued staff housing programme. A further 6 rondavels at Kasungu will bring the accommodation for this camp up to 30-45 persons and additional game viewing vehicles will be required. Lengwe accommodation is also increased from 8 to 12 persons.

5. JUSTIFICATION FOR PROPOSED WORK

In the past 3 or 4 years basic game camps have been established in three areas, the Nyika, Kasungu and Lengwe, all of which have recently become National Parks under a new National Parks Act. Initial investment was deliberately small as visitor and tourist potentials were uncertain. Foreign car and air tourist traffic has now commenced, and the future prospects are much clearer, after visits by U.K. and German travel agents in October, 1969. These and other experts envisage a rapidly increasing demand for tourist game-viewing facilities in Africa, and rapid and intensive developments are necessary if Malawi's wildlife resources are to be maintained at the standard required by the tourist industry.

6. EXECUTION AND SUPERVISION

All supervision and work to be carried out by the Department of Forestry and Game, under the Chief Game Warden in charge of the Wildlife Division of the Department.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : DEVELOPMENT OF WILDLIFE RESOURCES

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/FORESTRY & GAME

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 79 ITEM 6

BRITISH AIDED PROJECT NO. : 34

1. PROJECT OFFICER : Chief Game Warden, Forestry and Game Headquarters.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings (M)						
Housing	(1)	600	9,250	9,300	5,000	24,150
Other Buildings	(2)	-	7,200	5,250	5,000	17,450
		600	16,450	14,550	10,000	41,600
3 Water Supplies (M)	(3)	-	750	1,000	1,000	2,750
4 Roads (M)	(4)	-	700	550	2,500	3,750
5 Other construction (M)	(5)					
Airstrips		40	450	-	-	490
Boundary demarcation		110	650	-	-	760
River moorings		-	-	-	1,000	1,000
		150	1,100	-	1,000	2,250
6 Vehicles & Plant	(6)					
Landrovers		-	1,075	2,150	1,500	4,725
Trucks		-	1,750	1,750	-	3,500
Tractors		-	1,350	-	-	1,350
Game viewing vehicles		-	1,500	3,000	-	4,500
Caravans		-	900	-	-	900
		-	6,575	6,900	1,500	14,975
7 Other Equipment	(7)					
Refrigeration		500	1,020	-	-	1,520
Rifles		-	1,000	500	500	2,000
Radio equipment		-	2,000	1,000	1,000	4,000
Misc.		500	600	-	-	1,100
		1,000	4,620	1,500	1,500	8,620

Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
8 Personal Emoluments	(8)					
Superscale		500	2,000	2,000	2,000	6,500
P.O. & T.O. Staff		715	2,860	7,740	7,740	19,055
Technical Assts./ Clerical Officers		75	600	600	600	1,875
Subordinate Staff		1,035	6,760	7,000	8,000	22,795
Temporary Staff		-	960	960	960	2,880
		2,325	13,180	18,300	19,300	53,105
9 Running Expenses	(9)					
Maintenance & Running Expenses Vehicles/Plant		600	3,610	5,610	5,610	15,430
Transport & Travelling		400	1,890	2,390	2,390	7,070
Road and camp maintenance		400	1,790	1,790	1,790	5,770
Uniforms		-	570	570	570	1,710
Conservation measures		400	2,000	2,810	3,810	9,020
Tools and materials		125	830	830	830	2,615
		1,925	10,690	14,000	15,000	41,615
10 Special Expenditure	(10)					
Training programme		-	2,000	4,000	2,000	8,000
TOTAL		6,000	56,065	60,800	53,800	176,665

(M) - As costed by Department of Forestry and Game for construction by the Department.

(b) Notes on Expenditure

(1) Housing

Jan-Mar 1970	One staff quarter (Class F) Kasungu National Park	£ 600
1970/71	1 EH (£850) and 4 double Class F quarters (£4800) at Kasungu National Park	5,650
	2 double Class F quarters Nyika National Park	2,400
	40 traditional type houses for patrol staff and junior camp staff in national parks and game reserves	1,200
		9,250
1971/72	2 senior staff quarters (Senior Biologist at Kasungu National Park and Game Ranger probably at Vwaza Game Reserve - new posts)	9,000
	10 junior staff houses (traditional)	300
		9,300
1972/73	Provision for junior staff housing, locations to be decided later.	5,000

(2) Other Buildings

1970/71	Three additional rondavels (fully equipped) Lifupa Camp, Kasungu National Park. Each rondavel has 2 beds and can accommodate up to 4 beds.	£ 2,700
	Expanded dining room with bar (traditional materials mainly) Lifupa Camp, Kasungu National Park	1,050
	Improved shelters (fully equipped but of traditional materials) for day visitors Lengwe National Park plus separate bar/shop.	700
	Additional toilet/washing facilities for day visitors Lengwe National Park	500
	New hide Lengwe National Park	250
	Laboratory/office Wildlife Biologist Kasungu National Park	2,000
		7,200
1971/72	3 rondavels Kasungu National Park	2,700
	1 chalet and dining room Lengwe National Park	1,300
	Viewing hide Lengwe National Park	250
	Laboratory/office extension Kasungu National Park - Senior Biologist	1,000
		5,250
1972/73	Camp improvements as required	5,000

(3) Water Supplies

1970/71	Water supply to Wildlife Research Unit, laboratory, housing and staff housing at Kasungu National Park	750
1971/72	Water supplies Lengwe National Park extension	1,000
1972/73	Water supplies proposed Liwonde Game Reserve	1,000
		2,750

(4) Roads

1970/71	10 miles access road poaching control proposed Liwonde Game Reserve	200
	15 miles inspection and poaching control road to complet coverage northern section Kasungu National Park	300
	10 miles access - poaching control road proposed Vwaza Game Reserve	200
		700

1971/72	Roads Lengwe National Park extension	£ 550
1972/73	Roads Liwonde Game Reserve	2,500

(5) Other Construction

Jan-Mar 1970	Airoraft parking point Nyika National Park (£40). Preliminary boundary demaroation Vwaza proposed Game Reserve (£110)	150
1970/71	Improvements Lifupa airstrip, Kasungu National Park (£200) and Katumbi airstrip, proposed Vwaza Game Reserve (£250) requested by Civil Aviation	450
	Boundary demaroation proposed Liwonde Game Reserve and Lengwe National Park extension, plus completion of Vwaza Game Reserve boundary demaroation	650
		1,100
1972/73	River moorings proposed Liwonde Game Reserve	1,000

(6) Plant and Vehioles

1970/71	1 L.W.B. Landrover for Game Ranger appointed October 1969	1,075
	1 5 ton truck Kasungu National Park (fire control measures, building)	1,750
	1 Massey Ferguson 165 tractor Nyika National Park (local transport labour, ploughing, firebreaks)	1,350
	1 VW Kombi game viewing vehiole (tourist air passengers) Kasungu National Park	1,500
	1 Caravan for Game Rangers setting up new proteotion networks in proposed Liwonde Game Reserve and Vwaza Game Reserve	900
		6,575
1971/72	2 VW Kombi game viewing vehioles Kasungu National Park	3,000
	1 5 ton truck Southern Region	1,750
	2 L.W.B. Landrovers (Senior Biologist and new Game Ranger)	2,150
		6,900
1972/73	Landrover and trailer	1,500

(7) Other Equipment

Jan-Mar 1970	Standby electricity generator Lifupa camp Kasungu National Park essential to ensure that camp supplies of power for pumping water and for light are not interrupted.	£ 500
	Refrigerator/bottle coolers (paraffin) Lengwe National Park. Essential for adequate cold storage beer/soft drinks	500
		1,000
1970/71	Sawbench in Nyika National Park for cutting firewood for hot water boilers (old sawbench now defunct)	600
	Refrigerator/bottle coolers/deep freezer (paraffin) Kasungu and Nyika National Park chalets	1,020
	Heavy rifles (20) for Game Guards (Many Game Guards are without rifles)	1,000
	Radio equipment (HF sets, masts, accumulators, trickle chargers) to complete radio network Zomba to 3 National Parks with visitor camps	2,000
		4,620
1971/72	Extend radio link to Vwaza Game Reserve (Katumbi airstrip) Purchase of rifles/ammunition	1,500
1972/73	Extend radio link to Liwonde Game Reserve. Purchase of rifles and ammunition	1,500

(8) Personal Emoluments

1970/71	1 Chief Game Warden S.8 (new post recruited October 1969; a second new post of Game Warden HQ (STO) is planned for 1970/71 onwards, full provision being made for the period 1971/73)	2,000
	1 Wildlife Biologist (P.O.)	1,480
	1 Game Ranger (T.O.)	1,380
	1 Game Scout (T.A.)	150
	1 Clerical Officer (C.O.)	150
	2 Field Assts. (T.A.) new posts Wildlife Research Unit	300
	16 Game Guards (new posts - Liwonde and Vwaza proposed Game Reserves)	1,395

	Non-established staff. Includes 42 anti-poaching staff, 4 cooks, 2 barmen, 6 drivers, 3 chalet servants.	£ 5,365
	Caterer (Game Ranger's wife) Kasungu National Park 8 months @ £60	480
	Temporary Game Ranger (6 months @ £80). New Game Reserve demarcations/anti-poaching measures	480
		13,180
1971/72	Add to 1970/71 personal emoluments new posts of 1 Senior Biologist (£1700), 1 Game Warden HQ (£1800) and 1 Game Ranger (£1380), plus two drivers (£240)	18,300

(9) Running Expenses

1970/71	Maintenance and Running Expenses vehicles, Lifupa camp, Kasungu National Park generating plant, Lengwe National Park borehole pumps	3,610
	Transport and travelling Senior/ Junior staff	1,890
	Tools and materials	830
	Maintenance, roads and camps	1,790
	Uniforms	570
	Conservation measures, Kasungu, Lengwe, Nyika National Parks. Following the recommendation of own and visiting Wildlife Biologists it is essential to commence completely protecting limited areas from fire in all three National Parks and to provide for regular game enumerations.	2,000
		10,690
1971/72	Add to 1970/71 Running Expenses provision for 5 new vehicles (£2,000) Transport and Travelling for 2 new posts(£500) and increasing fire protection (£810)	14,000
1972/73	Add to 1971/72 Running Expenses provision for movement of game animals into National Parks and new Game Reserves (£1,000)	15,000

(10) Special Expenditure

1970/71	Staff Training Scheme Very high priority is given to staff training and an initial start in more formal training (instead of previous limited in-service training) is urgently required in 1970/71. A U.N. training officer is expected to be available and the funds shown are to provide for an 18 week course, including transport hire, equipment, tentage. This course will concentrate upon Game Scouts (T.A.)	/in

	in preparation for more advanced training at the College of African Wildlife Management, and on selected Game Guards.	£ 2,000
1971/72	The 1970/71 training scheme must be extended in succeeding years. Further Scouts will have preliminary training in 1971/72 before they qualify to be sent to the College of African Wildlife Management and a start will be made in simpler training for 100 Game Guards. Provision is made for a caravan for the Instructor, a truck and running expenses for expanded courses. Salary of Instructor provided under Personal Emoluments.	4,000
1972/73	Continuation of training scheme	2,000

(c) Import Content

See separate Schedule for Ministry of Natural Resources.

(d) Expenditure by Region

See schedule attached overleaf.

3. LOCATION OF CONSTRUCTION

Main locations of building programmes are Kasungu, Nyika, and Lengwe National Parks. Minor construction at Liwonde and Vwaza proposed Game Reserves. All construction will be by the Department of Forestry and Game.

(d) Expenditure by Regions

	1970			1970/71			1971/72			1972/73		
Category	S	C	N	S	C	N	S	C	N	S	C	N
Buildings	-	600	-	1,850	11,800	2,800	1,850	12,700	-	4,000	4,000	2,000
Water Supplies	-	-	-	-	750	-	1,000	-	-	1,000	-	-
Roads	-	-	-	200	300	200	550	-	-	2,500	-	-
Other Construction	-	-	150	650	200	250	-	-	-	1,000	-	-
Plant/Vehicles	-	-	-	1,975	3,250	1,350	1,750	3,650	1,500	-	1,500	-
Other Equipment	500	500	-	1,000	1,700	1,920	300	200	1,000	1,000	300	200
Personal Emoluments	900	800	625	6,000	4,000	3,180	8,300	6,500	3,500	8,800	7,000	3,500
Running Expenses	800	800	325	4,000	4,000	2,690	6,000	6,000	2,000	6,000	6,000	3,000
Special Expenditure	-	-	-	500	1,000	500	500	3,000	500	500	1,000	500
TOTAL	2,200	2,700	1,100	16,175	27,000	12,890	20,250	32,050	8,500	24,800	19,800	7,200

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS - PRE-INVESTMENT STUDY VIPYA PULP/PAPER MILL

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE AND NATURAL RESOURCES/ FORESTRY AND GAME

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 79 ITEM 61

RELATED PROJECTS : VIPYA PULPWOOD

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
10 Special Expenditure	-	2,500	-	-	2,500
TOTAL	-	2,500	-	-	2,500

(b) Non-British, Non-Malawi Expenditure

Not applicable.

(c) Previous Expenditure

There have been previous studies of which the total cost to the Malawi Government has been £3,725.

(d) Source of Finance

Local resources.

2. PROJECT TARGET

To provide the essential local counterpart costs for a pre-investment study on the proposed Vipya pulp and paper mill. It is expected that this study will be carried out with the assistance of the U.N.D.P. Special Fund.

Expected Completion Date: 31st March, 1971

3. BACKGROUND INFORMATION

The Vipya Pulpwood project makes provision for the planting of 69,000 acres of timber suitable for pulping - 54,000 acres of pine and 15,000 acres of eucalyptus. This will start to produce logs sufficiently mature to be milled from 1975 onwards, which means that the mill should be erected by that date or within the next two years.

Investigations by the Forestry Department, through its advisers and consultants, indicate that there would be an adequate regional market within and around Malawi for the outturn of a mill producing bleached kraft linerboard, fluting and sack paper at an initial rate equivalent to 150 tons of air dry kraft pulp per day. With the planned acreage, production can be increased to 300 tons per day from 1980 onwards.

There have been a number of studies since 1963, leading to an approach in 1968 to the United Nations Development Programme for aid in carrying out a full marketing and engineering pre-investment study. The U.N.D.P. has now agreed to undertake a marketing study, with a view to a separate engineering study later, and have appointed the I.B.R.D. (World Bank) as Executing Agency. The I.B.R.D. will in turn employ commercial consultants who are now being selected.

The purpose of these studies is to prepare a prospectus and to promote investment in this project by a suitable consortium.

4. PROPOSED WORK 1970/73

Provision of necessary transport and support costs resulting from the proposed U.N.D.P. pre-investment study.

5. JUSTIFICATION FOR PROPOSED WORK

The investment of nearly £1,000,000 in the Vipya Pulpwood project has been made on the assumption that a mill will be built. Steps must be taken to ensure that this can and will be done.

6. EXECUTION AND SUPERVISION

Disbursement will be controlled by the Director of Forestry and Game, who will maintain very close liaison with the visiting team.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS - PRE-INVESTMENT STUDY VIPYA PULP/PAPER MILL

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE & NATURAL RESOURCES/ FORESTRY & GAME

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 79 ITEM 61

1. PROJECT OFFICER

Director of Forestry and Game

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
10 Special Expenditure					
Transport in Malawi	-	1,500	-	-	1,500
Secretarial Assistance	-	400	-	-	400
3% Cash contribution to UNDP for personnel costs	-	600	-	-	600
TOTAL	-	2,500	-	-	2,500

(b) Notes on Expenditure

(1) It is not possible to give a detailed breakdown of support costs as much depends on how the survey develops and what demands U.N.D.P. will make.

(c) Import Content

Transport and services only. An unknown amount of foreign exchange may be needed for subsistence allowances outside Malawi.

(d) Breakdown of Expenditure by Region

Most expenditure will take place in the Southern Region.

3. LOCATION OF CONSTRUCTION

Not applicable.

HEAD 80

SURVEYS AND LANDS

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : ECONOMIC MINERAL SURVEY

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/GEOLOGICAL SURVEY

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80 ITEM 1

BRITISH AIDED PROJECT NO. : 35

RELATED PROJECTS : Mineral Exploration Unit.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
10 Special Expenditure	931	5,800	6,469	7,200	19,469
TOTAL	931	5,800	6,469	7,200	19,469

(b) Non-British, Non-Malawi Expenditure

Nil

(c) Previous Expenditure

		Cumulative Total
1965	52,020	52,020
1966	70,245	122,265
1967	63,142	185,406
1968	62,845	248,251
1969 Printed Estimates	69,103	
1969 Revised Estimate	57,342	
1969 Carry-forward (included in Jan/Mar. 1970 above)	931	

(d) Source of Finance

U.K. Development Loan

2. PROJECT TARGET

To complete the geological survey of Malawi in detail suitable for publication at a scale of 1:100,000 and to publish a comprehensive series of maps and descriptive bulletins. Also to complete a geochemical drainage reconnaissance of the Central and Northern Regions. The economic purpose of this work is to produce an overall picture of the geology of the country and indicate areas where economic mineralisation might occur.

Expected completion date: 31st March, 1973, assuming no exceptional delays in printing.

3. BACKGROUND INFORMATION

At the commencement of this project in 1965 systematic geological survey of the Southern Region was incomplete and very little had been done in the Central and Northern Regions. The size of the Geological Survey financed from Revenue Account was so small that progress would have remained very slow. Since the beginning of the project gaps in the systematic survey of the Southern Region have been essentially completed as has the mapping of the rest of the country. It is anticipated that fieldwork will be completed at the end of 1969 and the results published over the following three years.

In addition, sampling of the Central and Northern Regions for a geochemical drainage reconnaissance should be completed and results made available for most of the area. Results, presently being produced for over 6,000 square miles a year, involve the production and assessment of ten element determinations from 25,000 samples. A close relation is being obtained between geochemical results and bedrock geology and anomalies worthy of follow-up investigation have been

d from several areas. These include nickel on basic and ultrabasic
tin on granite, niobium on nepheline syenite associated with intrusive
, and several anomalies of copper, arsenic (a pathfinder for gold),
c.

D WORK 1970/73

e preparation of map plates and bulletins for publication will continue
972/73.

CATION FOR PROPOSED WORK

tailed knowledge of the geological environment is essential in assessing
nomic potential of any area. The results of this project are deline-
reas where deposits of economic minerals may occur, and a team of reduced
to carry out detailed follow-up investigations of these areas under the
ject, "Mineral Exploration Unit".

ould the results of this work give rise to a local mineral industry
ng for export, the economic advantage to Malawi could be very considerable.

ON AND SUPERVISION

rk under this project will be executed and supervised by the Director of
cal Survey.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : ECONOMIC MINERAL SURVEY

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/GEOLOGICAL SURVEY

MALAWI DEVELOPMENT ESTIMATES : HEAD 80 ITEM 1

BRITISH AIDED PROJECT NO. : 35

1. PROJECT OFFICER : Director of Geological Survey.

2. FINANCIAL DETAILS

(a) Details of Expenditure

Category	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
10 Special Expenditure					
Printing and Publication	931	5,800	6,469	7,200	19,469
TOTAL	931	5,800	6,469	7,200	19,469

(b) Notes on Expenditure

There is no provision for personal emoluments and support costs of staff in this project. These are included in the new project "Mineral Exploration Unit", under which certain of the staff of this project will be re-employed. Remaining costs under this project are entirely for the publication of results.

(c) Import Content

Category	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
Printing of publications	931	5,800	6,469	7,200	19,469
TOTAL	931	5,800	6,469	7,200	19,469

(d) Breakdown of Expenditure by Region

Practically all expenditure will be incurred at Head Office, Zomba.

3. LOCATION OF CONSTRUCTION

None.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : PRECISE LEVELLING SURVEY

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/ SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80, ITEM 2

BRITISH AIDED PROJECT NO. : 48

RELATED PROJECTS : Irrigation, engineering, road and rail construction and topographical mapping.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
6 Plant & Vehicles	-	-	2,500	2,600	5,100
7 Other Equipment	200	800	1,800	1,000	3,600
8 Personal Emoluments	980	4,408	4,653	4,906	13,967
9 Running Expenses	487	1,948	2,023	2,098	6,069
TOTAL	1,667	7,156	10,976	10,604	28,736

(b) Non-British, Non-Malawi Expenditure Nil

(c) Previous Expenditure

		Cumulative Total
To 31/12/1968	10,666	10,666
1969 Printed Estimates	5,385	
1969 Revised Estimates	5,385	
1969 Estimated carry forward	Nil	

(d) Source of Finance: U.K. Development Loan

2. PROJECT TARGET

To have trained by the end of 1970 four levelling teams capable of carrying out the work of establishing a primary and secondary network of precise levels with a minimum of supervision, and at the same time to have made significant progress towards the establishment of the primary and secondary network in the southern half of the country.

Expected Completion Date

The scheme will continue for many years. The cost will be transferred to revenue account as soon as possible.

3. BACKGROUND INFORMATION

No system of precise levels exists in Malawi at the present time and continuous requests for details of Bench marks reach the Department of Surveys. In addition to spot values for individual engineering works a system of precise levels would be of considerable value for the basic control of large scale

/topographic

topographic mapping with small contour intervals now contemplated for several areas with irrigation and urban development potential. There are already signs of a dangerous proliferation of local systems which could well lead to future trouble owing to the different datum heights employed.

4. PROPOSED WORK 1970/73

Malawi staff at Technical Assistant level have been recruited and trained under a Principal Surveyor of the Department who undertakes this work in addition to other duties. It is expected that of those recruited one will show sufficient administrative and technical ability to be promoted to Technical Officer and take charge of the field work by the end of 1970.

Work has already started in the Southern Region on a programme designed to connect the nearest known reliable levelled heights which are in Mozambique at Sena on the Zambezi, 22 miles South of the Malawi Border, and at Nova Freixo, 30 miles east of the Malawi border opposite Namwera, with a line of levels through Southern Malawi. The first phase, nearly complete, is to run a primary circuit from Blantyre through Cholo, Chiromo, Chikwawa and Mwanza back to Blantyre, with a line to Vila Nova de Fronteira in Mozambique and a cross check between Blantyre and Chikwawa. This will give a self checking circuit involving 400 miles of double levelling, and will tie in the survey work being done in the Lower Shire Valley. The second phase will involve circuits taking in Dedza, Ntakataka, Fort Johnston and Liwonde, with a line to Nova Freixo to tie in with the existing bench mark there. This phase will also tie in the railway and lakeshore bench marks. Arrangements are being made to obtain a second connection to the Mozambique system at Zobue.

5. JUSTIFICATION FOR PROPOSED WORK

Unless an internationally recognised system of Bench marks is established there will eventually have to be a great deal of re-estimation of heights and re-drawing of contours as isolated surveys become joined onto one another in the course of development.

6. EXECUTION AND SUPERVISION

The project will be carried out by the staff recruited for and paid by the project under the supervision of the Director of Surveys through his Principal Surveyor.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : PRECISE LEVELLING SURVEY

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/ SURVEYS

MALAWI DEVELOPMENT ESTIMATES,1969 : HEAD 80, ITEM 2

BRITISH AIDED PROJECT NO. : 48

1. PROJECT OFFICER: Director of Surveys through Principal Surveyor.

Execution by the staff specially recruited for this project.

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
6 Plant & Vehicles						
1 Replacement Landrover LWB		-	-	1,100	1,150	2,250
1 Replacement 30 cwt truck		-	-	1,400	1,450	2,850
		-	-	2,500	2,600	5,100
7 Other Equipment						
Bench Marks		200	800	1,000	1,000	2,800
Replacement tentage		-	-	800	-	800
		200	800	1,800	1,000	3,600
8 Personal Emoluments						
1 Surveyor (T.O.)		-	488	509	530	1,527
8 Survey Assistants(T.A)		342	1,368	1,456	1,544	4,368
4 Drivers		180	720	800	888	2,408
28 Labourers	(1)	458	1,832	1,888	1,944	5,664
		980	4,408	4,653	4,906	13,967
9 Running Expenses						
Subsistance	(2)	218	873	873	873	2,619
M.& R.E.M.V. for 4 vehicles		269	1,075	1,150	1,225	3,450
		487	1,948	2,023	2,098	6,069
TOTAL		1,667	7,156	10,976	10,604	28,736

(b) NOTES ON EXPENDITURE

(1) An additional labourer per party i.e. 4 in all has been allowed for to look after camp when parties are observing.

(2) Continuous "ulendo" is envisaged as parties will be working further and further away from base and subsistance has been allowed for at the monthly field rates.

/(c) Import

(c) IMPORT CONTENT

	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
Vehicle replacement	-	-	2,500	2,600	5,100
Benchmarks	-	160	200	200	560
Replacement Tentage	-	-	500	600	1,100
M.& R.E.M.V. at 90%	217	968	1,035	1,103	3,106
TOTAL	217	1,128	4,235	4,503	9,866

(d) Breakdown of Expenditure by Region

Most expenditure will be in the Southern Region but levelling work will have commenced in the Central Region by 1971.

3. LOCATION OF CONSTRUCTION

Levelling will take place in the Kasupe/Fort Johnston and Zomba/Matope areas and bench mark construction in the Balaka/Dedza and Monkey Bay areas.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : MAP REVISION AND REPRODUCTION UNIT

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/ SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80, ITEM 3

BRITISH AIDED PROJECT NO. : 64

RELATED PROJECTS : Aerial Survey and Mapping

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
2 Buildings *	-	1,500	-	-	1,500
7 Other Equipment	-	7,800	14,000	-	21,800
8 Personal Emoluments	918	5,836	8,372	12,345	26,553
9 Running Expenses	300	3,000	4,000	4,000	11,000
10 Special Expenditure	-	7,000	-	10,000	17,000
TOTAL	1,218	25,136	26,372	26,345	77,853
*22 Other Buildings	-	1,500	-	-	1,500

(b) Non-British, Non-Malawi Expenditure

£800 for Zeiss KG 30 contact printer with special dodging

(c) Previous Expenditure

		Cumulative Total
To 21/12/1968	17,182	17,182
1969 Printed estimates	29,011+	
1969 Revised estimate	14,000	
1969 estimated carry forward	8,218	
of which Jan-Mar 1970	1,218	
1970/71	7,000	

+ Increased to £35,789 by re-allocation warrant for £6,778

(d) Source of Finance

U.K. Development Loan

2. PROJECT TARGET

To develop and bring into operation by the end of 1971/72 a Map Revision and Reproduction Unit capable of revising in full, over a ten year cycle, the basic maps of Malawi. The expanded unit will also provide facilities for the production of photographic prints, special map runs and other cartographic and reproduction services now urgently required by other government departments.

Expected Completion Date

Continuing project which will be transferred to Revenue Account when possible.

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3. BACKGROUND INFORMATION

Until this project began no facilities existed in Malawi for the revision and printing of maps or aerial photographs, the country having benefited from the service offered to underdeveloped Commonwealth Countries by the United Kingdom Directorate of Overseasse Surveys. By the end of 1970, the whole of Malawi will be covered by the standard 1/50,000 series, and it is understood that once this is achieved Malawi must itself become responsible for the revision of these sheets and any others that may be introduced.

The first 1/50,000 sheets which were compiled from 1948 photography and the standard 1/250,000 sheets which were compiled from even earlier information are very out of date and are also running out of print. The country is developing rapidly and there are now also demands for large numbers of photographic prints, and long runs of specialist maps for agricultural, educational and tourist purposes.

Thus two complementary requirements are involved, viz:-

(i) The organisation of a cartographic section to undertake revision of the topographical series and compilation of specialist maps and

(ii) the setting up of a reproduction unit for the preparation and printing of maps and aerial photographs.

4. PROPOSED WORK 1970/73

It is proposed to revise the basic topographic series over a 10 year cycle, i.e. at the rate of 16 maps of the 1/50,000 scale and 1 map of the 1/250,000 scale per year. In addition corrected reprints may have to be issued from time to time of townships and rapidly developing areas (estimated at 6 sheets per year). There are also various maps at scales of 1:1,000,000 or more which need to be updated. This will require aerial photography estimated to cost between £7,000 and £10,000 every other year.

The annual programme of the cartographic section is expected to build up to :-

Scale 1/50,000 or less		Scale 1/250,000 or more	
Full Revision 16 sheets	Corrected Reprint 6 sheets	Full Revision 1 sheet	Corrected Reprint 3 sheets

It is anticipated that demands for photographic prints will reach 10,000 per annum, whilst the printing press will have a minimum through - put of 300,000 impressions per annum, as most of the maps will be five - coloured productions.

5. JUSTIFICATION FOR PROPOSED WORK

Up to date maps are essential for the successful planning and execution of most development projects.

6. EXECUTION AND SUPERVISION

The work will be conducted by the staff provided in this project under the supervision of the Map Production Officer.

Foot Note: Most of the maps in this volume have been printed by the Map Reproduction Unit.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : MAP REVISION AND REPRODUCTION UNIT

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT & CABINET/SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80 ITEM 3

BRITISH AIDED PROJECT NO. : 64

1. PROJECT OFFICER : Map Production Officer

Execution by staff specially recruited for this project.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
2 Buildings						
Modifications & Extension to print & camera rooms	(1)	-	1,500	-	-	1,500
7 Other Equipment						
Contact vacuum frame and point source light	(2)	-	1,200	-	-	1,200
Contact printer (Zeiss KG 30)	(3)	-	800	-	-	800
Rotary-offset printing machine second-hand	(4)	-	5,800	-	-	5,800
Process camera and Accessories	(5)	-	-	14,000	-	14,000
		-	7,800	14,000	-	21,800
8 Personal Emoluments						
1 Chief Cartographer (C.T.O.)	(6)	-	670	1,371	1,434	3,475
2 Senior Cartographers (S.T.O.)	(7)	319	1,276	1,276	2,287	4,839
4 Cartographers (T.O.)	(8)	-	287	1,148	2,340	3,775
8 Cartographic Assistants (T.A/S.T.A.)	(8)	280	1,496	1,600	2,752	5,848
1 Print Superintendent (C.T.O.)	(9)	-	670	1,371	1,434	3,475
1 Photo-lithographer (T.O.)	(10)	319	837	406	422	1,665
1 Lithographer (T.O.)	(11)	-	-	-	398	398
6 Reproduction Assistants (T.A./S.T.A.)	(12)	-	600	1,200	1,278	3,078
		918	5,836	8,372	12,345	26,553
9 Running Expenses						
Drawing materials, paper, inks, film, chemicals, spares and replacements.		300	3,000	4,000	4,000	11,000
10 Special Expenditure						
Aerial Photography	(13)	-	7,000	-	10,000	17,000
TOTAL		1,218	25,136	26,372	26,345	77,853

(b) Notes on Expenditure

(1) Present recording camera room not large enough to house new process camera which requires additional dark room facilities.

(2) For standard contact reversals for repromat up to 30"x40".

(3) For the production of contact prints from aerial film. The Zeiss KG 30 has dodging facilties not available on British equipment - Recommended by Survey Adviser to O.D.M.

(4) Printing demands require automatic-feed, rotary-offset, litho-machine but ultra high speeds not essential, hence second-hand model recommended.

(5) For precision enlargements, reductions. registration and screening.

(6) To co-ordinate all cartographic processes. Salary from mid 1970/71. OSAS element not included.

(7) Initially one experienced expatriate for revision required. In 1972/73 additional post for Malawian at present undergoing training.

(8) Gradual build up through training to full complement in 1972/73.

(9) To co-ordinate all reproduction processes Salary from mid 1970/73 O.S.A.S. element not included.

(10) Expatriate in post until mid 1970/71. To be replaced by Malawian.

(11) Malawian to be trained overseas and return 1972/73.

(12) Gradual build up through training to full complement in 1972/73.

(13) The sum of £7,000 is a carry forward from 1969 for aerial photography which was unable to be flown in the 1969 season.

(c) Import Content

Category	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
2 Buildings(@ 10%)	-	150	-	-	150
7 Other Equipment	-	7,800	14,000	-	21,800
9 Running Expenses	300	2,700	3,600	3,600	9,900
10 Special Expenditure	-	7,000	-	10,000	17,000
TOTAL	300	17,650	17,600	13,600	48,850

(d) Breakdown of Expenditure by Region

All expenditure will be at Headquarters in the Southern Region, but mapping and reproduction is for the whole country.

LOCATION OF CONSTRUCTION

At Blantyre where the unit is already located.

REPUBLIC OF ZAMBIA
A
C
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2
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C3

REPUBLIC OF MALAWI

DEPARTMENT OF SURVEYS
MAP REVISION PROGRAMME

1:50,000

1970 – 71

1971 – 72

1972 – 73

1:250,000

1970 – 71 Lilongwe

1971 – 72 Dedza

1972 – 73 Vila Cabral

REPUBLIC OF Z

MOCAMBIQ

SCALE
MILES
20 10 0 20

Boundaries — International
Districts
Railways
Principal Roads

© MALAWI GOVERNMENT

Drawn and Printed by the Department of Surveys, Malawi. February 1970.

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1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

CT TITLE : HYDROLOGICAL INVESTIGATION

NSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/WATER RESOURCES DIVISION

I DEVELOPMENT ESTIMATES 1970/71 : NEW PROJECT

SH AIDED PROJECT NO. : NEW PROJECT

ED PROJECTS : Hydrological Studies for Tea Irrigation, Cholo/Mlanje and all other projects for which hydrological information is required.

INANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
5 Other Construction	-	1,090	1,090	1,320	3,500
6 Plant and Vehicles	-	3,450	1,150	-	4,600
7 Other Equipment	-	3,650	3,700	4,250	11,600
8 Personal Emoluments	437	6,062	6,850	7,151	20,063
9 Running Expenses	313	2,948	3,410	3,479	9,837
10 Special Expenditure	1,250	7,800	7,800	7,800	23,400
TOTAL	2,000	25,000	24,000	24,000	73,000

(b) Non-British, Non-Malawi Expenditure

7 Hydrometry Equipment (Silt samplers, current meters and Cable Traverse Gear)	-	2,500	2,300	2,550	7,350

(c) Previous Expenditure

Nil

(d) Source of Finance

Proposed for U.K. Development Loan.

PROJECT TARGET

To increase the amount of hydrological data available and to improve its quality by:-

(a) Processing current hydrological data by electronic computer.

(b) Re-processing past records by computer to improve quality.

(c) Increasing the network of gauging stations.

(d) Intensifying investigation of silt loads of rivers.

Expected Completion date:

(a) Continuous, but will be transferred to Revenue Account as funds permit.

(b) 1973.

(c) Establishment of stations : 1973
Collection of data : continuous

(d) Purchase of equipment : 1973
Collection of data : continuous.

3. BACKGROUND INFORMATION

(a) and (b) The hydrological data collected is, at present, manually processed, which is not very efficient and is liable to occasional arithmetical errors. This has not been of great importance in the past as the demand for hydrological data has been relatively small and all such data could be checked by a senior officer before being sent out. The increase in the demand for this type of information now makes it necessary that such data is accurate and in a readily accessible form.

(c) The existing hydrological survey station network was set up in 1950-55 since which time there has been no significant increase in coverage or improvement in techniques. New proposed development projects, principally in the irrigation field, necessitate the collection of data in areas previously not covered.

(d) The silt measuring equipment used at present does not give accurate results but merely an indication of the order of magnitude of the silt load. This type of information is no longer sufficiently detailed for the requirements of those wishing to use this information.

The conservation of water is becoming of increasing importance because of increased demands on available resources. To enable the Government to exercise control on the use of water, a Water Resources Act was passed in November, 1969. The data collected under this project will be used in deciding the amount of water which will be available for allocation amongst different users.

4. PROPOSED WORK 1970/73

(a) and (b) In addition to processing current hydrological data, the past records are to be re-processed to improve their accuracy and value. It is proposed that five years past records be processed in each full year of the programme, together with the current year. This will involve processing a total of six years records during each year of the programme.

(c) There are at present 193 gauging stations throughout the country of which 37 are in the Northern Region, 49 in the Central Region and 107 in the Southern Region. It is proposed to establish 50 new gauging stations of which 28 will be in the Northern Region and 22 in the Central Region. Stations in areas at present inaccessible during the rainy season will be equipped with automatic equipment.

(d) Improved silt measuring equipment is required as the present equipment does not give fully constent results. It is proposed to purchase eleven silt samplers during the period of the programme which will supercede the existing equipment.

5. JUSTIFICATION FOR PROPOSED WORK

It is not possible to produce accurate feasibility studies for proposed development projects using water without having a fairly accurate assessment of available water. This assessment can only be made from past records, and 5-15 years of such records are necessary for most projects. The design of projects can also be carried out much more effectively at a smaller overall cost if an accurate forecast can be made of a river's behaviour.

(a) and (b) The increased accuracy of the hydrological data will greatly assist in the planning and efficient execution of other development projects for which information on river flows is required. The data produced by the computer will be suitable for printing and it is proposed to publish annual Hydrological Year Books which will be of great help to visiting missions, consulting engineers and other government departments who are investigating the wide variety of development projects for which accurate, up to date hydrological data is required.

(c) The increase in station coverage will permit the collection of data from likely development areas so that future needs are anticipated. A condition of the loan from the World Bank for the Tedzani Falls Hydroelectric Scheme is that a survey should be carried out of the water resources of the Lake Malawi catchment within the next 5 years. An expert will shortly advise the Malawi Government on the measures necessary to prepare for this survey and this present project will enable the Water Resources Division to carry out his recommendations.

This assessment and the new development project "Hydrological Studies for Tea Irrigation, Cholo/Mlanje" will make it possible to budget the water resources of the country in such a manner as to allow the maximum development potential to be realised.

(d) Information on the silt load of rivers is required as the silt load greatly affects the rivers' use for irrigation, water supplies and hydro-electric power schemes. The data collected by the more accurate equipment will also provide a measure of the effectiveness of water and soil conservation techniques in the various river catchment areas.

6. EXECUTION AND SUPERVISION

(a) and (b) The data processing will be executed by the Sussex River Board in the U.K. in consultation with the Senior Hydrologist, Ministry of Natural Resources. This Board has signified their willingness to co-perate in this programme and there will be a saving in cost as the computer programming and systems analysis costs will be shared rather than be borne solely by the Malawi Government.

(c) and (d) The expansion of the hydrological survey network of stations and improvement in measurement techniques will be carried out by the Water Resources Division of the Ministry of Natural Resources. The work will be under the central control of the Senior Hydrologist but will be carried out by the Regional staff of the Division.

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1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

CT TITLE : HYDROLOGICAL INVESTIGATION

NSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/WATER RESOURCES

SH AIDED PROJECT NO. : NEW PROJECT

I DEVELOPMENT ESTIMATES 1970/71 : NEW PROJECT

ROJECT OFFICER : The Senior Hydrologist.

INANCIAL DETAILS

a) Details of Expenditure

Category	Notes	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
5 Other Construction						
Setting up 50 gauging stations @ £20 each average (By years: 17/17/16)	(M)(1)	-	340	340	320	1,000
Construction of 10 gauging weirs @ £150 each average (By years: 3/3/4)	(M)(2)	-	450	450	600	1,500
Installation of 10 automatic recorders @ £100 each (By years: 3/3/4)	(M)(3)	-	300	300	400	1,000
TOTAL		-	1,090	1,090	1,320	3,500
6 Plant and Vehicles						
4 Landrovers @ £1,150 each (By years: 3/1/0)	(4)	-	3,450	1,150	-	4,600
7 Other Equipment						
10 Automatic level recorders @ £300 each (by years: 3/3/4)	(3)	-	900	900	1,200	3,000
5 sets Cable Traverse Gear @ £500 each (By years: 1/2/2)	(5)	-	500	1,000	1,000	2,500
9 Current meters @ £250 each (By years: 2/3/4)	(6)	-	500	750	1,000	2,250
11 Silt Samplers @ £350 each (By years: 5/3/3)	(7)	-	1,750	1,050	1,050	3,850
TOTAL		-	3,650	3,700	4,250	11,600
8 Personal Emoluments						
1 Chief Hydrological Supervisor C.T.O.	(8)	335	1,455	1,518	1,581	4,554
1 Computer PO/CTO	(8)	-	1,439	1,502	1,565	4,506
2 Hydrological Supervisors T.O.	(4)	-	1,071	1,115	1,149	3,335
1 Senior Field Assistant T.A.	(4)	80	335	350	366	1,051

onal Emoluments cont'd)

Category	Notes	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
2 Field Assistants T.A. (1 only in 1970/71)	(4)	-	150	300	300	750
3 Gauging Assistants SC.III (1 only in 1970 1st ½)	(4)	22	255	255	258	768
4 Drivers (3 only in 1970/71)	(4)	-	990	1,320	1,320	3,630
4 Labourers	(4)	-	240	240	240	720
50 Gauge Readers (17 in 1970/71 34 in 1971/72 50 in 1972/73)	(9)	-	127	250	372	749
TOTAL		437	6,062	6,850	7,151	20,063
9 Running Expenses						
Transport & Travelling (including subsistence)	(10)	313	1,598	1,610	1,679	4,887
Maintenance & Running Expenses of Vehicles	(11)	-	1,350	1,800	1,800	4,950
TOTAL		313	2,948	3,410	3,479	9,837
10 Special Expenditure						
Programming and systems analysis	(12)	1,250	-	-	-	-
Annual punching @ £400 per year 6 years @ £400	(13)	-	2,400	2,400	2,400	7,200
Annual processing @ £900 per year 6 years @ £900	(13)	-	5,400	5,400	5,400	16,200
TOTAL		1,250	7,800	7,800	7,800	23,400
TOTAL		2,000	25,000	24,000	24,000	73,000

(M) = Costed for construction by the Water Resources Division.

b) Notes on Expenditure

(1) There will be 50 Regular Gauging Stations established under the programme. It is estimated that the average cost of each station will be £20 which includes the provision and installation of gauge plates and bench marks.

(2) Gauging weirs are to be constructed at those stations where there is no natural control for the station or where information on low flows is required to a high degree of accuracy.

(3) Automatic recorders are to be installed at those stations which are inaccessible during the rainy season and at stations on rivers which it is thought will be used for major projects. These recorders operate without attention for up to six months.

(4) There will be four mobile teams measuring river discharge by the end of the programme. These measurements will be made at a minimum of twice per month during the first few years of station operation to obtain the necessary information for the construction of the station rating curve. During the early part of the programme, the teams will be engaged on construction and installation work in addition to their stream measuring duties.

(5) River discharge measurements are normally carried out by using a current meter to determine the velocity of flow of the river at various points on its cross-section. The current meter is carried across the river either by a man wading or by boat or, if these are not possible in times of flood, by suspending the meter from a bridge. Where none of these methods are suitable as, for instance, when a river is in flood and there is no bridge near the gauging site, it is necessary to use a cable traverse to carry out the measurement. This consists of a wire suspended between two supports, one on each river bank, so that the wire is above the highest anticipated flood level. The meter is then suspended from a pulley block which can run along the wire.

The cable traverse is a permanent installation and the above is a simplified description.

(6) The current meters are of two types, one for use in rivers where the depth of water is greater than 2 feet, the other for shallower depths. Five meters of the former type are required, one being a spare, and four of the latter type.

(7) The silt samplers are to be used in all the Regions and are not to be limited to the stations constructed under this programme.

(8) The new posts of Chief Hydrological Supervisor and Computer are required so that the Senior Hydrologist might be relieved of the routine running of the Divisions hydrological stations so as to be able to devote more time to the water resources control and conservation aspects of the Division's responsibilities.

(9) There is a gauge reader for each of the 50 new stations in the programme. The gauge readers are required to read the river gauge twice a day and are paid at the rate of 12/6d. per month.

(10) Field staff will be carrying out their duties of construction or river measurement for about twenty days per month. The costs are estimated to be as follows:

Subsistence	£800
Holiday Grants	£ 60
Car Allowance	£740.

(11) The M. & R.E. has been estimated at £450 per annum per vehicle.

(12) The charge for systems analysis and programming are initial charges which are shared with the Sussex River Board. The total estimated programming charge is £9,700 of which the Malawi Government would pay approximately 13%.

(13) The annual charges are for punching an estimated 7 million characters per annum and for processing which is estimated to require 36 hours computer time.

(c) Import Content

Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 years
nil	7,250	5,030	4,425	16,705

These costs cover categories 6 and 7 (Landrovers and Gauging Equipment) and building stores in category 5.

(d) Breakdown of Expenditure by Region (See Schedule attached)

3. LOCATION OF CONSTRUCTION

All gauging stations are to be constructed in the Central and Northern Regions with 22 in the Central and 28 in the Northern. Exact sites are to be chosen in the light of the results from a preliminary survey to be conducted during the first 3 months of 1970.

All work will be carried out by the Water Resources Division of the Ministry of Natural Resources.

(d) Breakdown of Expenditure by Region

	1970/71				1971/72				1972/73			
	S	C	N	H.Q.	S	C	N	H.Q.	S	C	N	H.Q.
5. Other Construction												
Gauging Stations	-	160	180	-	-	140	200	-	-	140	180	-
Gauging Weirs	-	300	150	-	-	150	300	-	-	300	300	-
Automatic Recorders	-	100	200	-	-	200	100	-	-	200	200	-
6. Plant & Vehicles												
Landrovers	-	1,150	2,300	-	-	1,150		-	-	-	-	-
7. Other Equipment												
Automatic Recorders	-	300	600	-	-	600	300	-	-	600	600	-
Cable Traverse Gear	-	-	500	-	-	500	500	-	-	500	500	-
Current Meters	-	250	250	-	-	500	250	-	-	500	500	-
Silt Samplers	1,050	350	350	-	350	350	350	-	350	350	350	-
8. Personal Emoluments												
Established Staff	-	855	956	2,894	-	877	1,143	3,020	-	894	1,179	3,146
Non-Established Staff	-	510	847	-	-	890	920	-	-	944	988	-
9. Running Expenses												
Transport & Travelling	-	411	543	644	-	423	543	644	-	430	575	674
M. & R.E.V.	-	450	900	-	-	900	900	-	-	900	900	-
10. Special Expenditure												
Annual Processing	-	-	-	7,800	-	-	-	7,800	-	-	-	7,800
TOTAL	1,050	4,836	7,776	11,338	350	6,680	5,506	11,464	350	5,758	6,272	11,620

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : MINERAL EXPLORATION UNIT

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/GEOLOGICAL SURVEY

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80, ITEM 6

BRITISH AIDED PROJECT NUMBER : NEW PROJECT

RELATED PROJECTS : Economic Mineral Survey

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 years
6 Plant & Vehicles	-	1,200	1,250	-	2,450
7 Other Equipment	1	4,750	750	750	6,250
8 Personal Emoluments	4,359	17,192	17,594	17,960	52,746
9 Running Expenses	2,710	10,850	20,350	10,350	41,550
TOTAL	7,070	33,992	39,944	29,060	102,996

(b) Non-British, Non-Malawi Expenditure

7 Geophysical Equipment	1	1,200	-	-	1,200
9 Laboratory Reagents and Supplies	300	500	500	500	1,500
9 Diamond drilling bits and miscellaneous	120	1,500	1,500	1,500	4,500
TOTAL	421	3,200	2,000	2,000	7,200

(c) Previous Expenditure: Nil.

(d) Source of Finance - Proposed for U.K. Development Loan.

2. PROJECT TARGET

To search for economic mineral deposits by the detailed investigation of areas of interest delineated by work carried out under the Economic Mineral Survey Project.

Expected Completion Date

It is expected that work should be completed during 1973, but if promising results are obtained, an extension will be necessary.

3. BACKGROUND INFORMATION

Work completed under the Economic Mineral Survey Project (1965/70) includes the completion of geological mapping in Malawi in semi-reconnaissance detail together with the covering of the Central and Northern Regions by a geochemical drainage reconnaissance. Thus an overall conception of the country's geology has been obtained and areas favourable for mineralisation located.

Areas having apparent economic mineral potential must now be examined in detail using all appropriate geological, geochemical and geophysical techniques in order that any ore bodies which may be present can be located. The object of this project is to provide the means by which such investigations can proceed.

4. PROPOSED WORK 1970/73

Areas which have been shown to have promise will be geologically mapped in greater detail and covered by geochemical surveys having suitably close-spaced sample points to allow the accurate delineation of any mineralisation which may be present. Magnetic and electromagnetic geophysical techniques will be employed in appropriate cases to delineate the boundaries of host rocks under superficial cover, and to map electrical conductors which may result from metallic mineralisation. It is also hoped to cover areas of promise by means of an airborne geophysical survey (financed by the UNDP) which will provide additional data for ground follow-up work under the present project.

The team to carry out this work will be headed by a Principal Geologist and will consist of a Geologist, a Geologist/Geophysicist; a Senior Prospector and a Prospector who will have appropriate support staff: a Chemist and two Laboratory Technicians will provide essential laboratory support and a Cartographer drawing office support.

5. JUSTIFICATION FOR PROPOSED WORK

The establishment of a mining industry in Malawi producing for export would be of very considerable economic benefit to the country. Work under the 1965/70 Development Project (Economic Mineral Survey) has shown areas where mineral deposits may occur, and this detailed follow-up work is essential if these areas are to be adequately explored. If results only slightly more favourable than those available at present can be obtained it appears certain that mining companies which have favourable areas in many countries competing for their attention will be induced to undertake detailed prospecting here.

From results so far available under the Economic Mineral Survey project areas worthy of detailed follow-up investigation include a great many (over 200) basic and ultrabasic bodies which together total some 250 square miles: of these some 100 are in the Central Region and the remainder fairly equally divided between the Northern and Southern Regions. These have given rise to soil anomalies of up to 5000 ppm. nickel and also anomalous values for copper. Chromite has been noted in one of them and platinum group minerals should also be sought.

A tin anomaly covering some five square miles occurs on the Nyika granite and strong niobium anomalies, each covering some 15 square miles occur on nepheline-syenite/granite complexes at Chikangawa and Mphompha to the north: these latter are also associated with anomalous radioactivity indicative of uranium pyrochlore.

An arsenic/gold association in the Dzalanyama area over some 10 square miles, and a second in the Dwangwa area over some 25 square miles are worthy of follow-up and many occurences of secondary copper in the Karonga area which are only now being discovered should be investigated further. Detailed mapping of an area in Nsanje having copper and lead/silver occurrences is presently in progress and it is hoped that further follow-up work will be justified. A significant Zinc anomaly over some three square miles near the Bua River deserves further attention.

Under this scheme it is also hoped to carry out further work on industrial minerals such as limestone, sand, gravel and brickclay for which there is an everincreasing demand.

6. EXECUTION AND SUPERVISION

Work under this scheme will be supervised by the Director of Geological Surveys and executed by the team outlined in "Proposed Work" above.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : MINERAL EXPLORATION UNIT

RESPONSIBLE MINISTRY/DEPARTMENT : NATURAL RESOURCES/GEOLOGICAL SURVEY

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80, ITEM 6

BRITISH AIDED PROJECT NO. : NEW PROJECT

1. PROJECT OFFICER: The Director of Geological Survey, through the Principal Geologist.

2. FINANCIAL DETAILS

(a) Details of expenditure	Notes	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
6 Plant & Vehicles						
Landrover		-	1,200	-	-	1,200
Bedford 30 cwt.lorry		-	-	1,250	-	1,250
TOTAL		-	1,200	1,250	-	2,450
7 Other Equipment						
Tentage and Camp Equip.		-	750	750	750	2,250
Geophysical apparatus (may be paid in 1st Qtr.1970)		1	2,500	-	-	2,500
Ore-microscope and attachments		-	1,500	-	-	1,500
TOTAL		1	4,750	750	750	6,250
8 Personal Emoluments (1)						
1 Principal Geologist		550	2,200	2,200	2,200	6,600
1 Geologist		300	1,160	1,210	1,260	3,630
1 Geologist/Geophysicist		300	1,460	1,510	1,560	4,530
1 Chemist		430	1,460	1,510	1,560	4,530
1 Senior Prospector		450	1,500	1,500	1,500	4,500
1 Cartographer		306	509	530	552	1,591
1 Prospector		128	509	530	552	1,591
2 Laboratory Technicians		255	1,018	1,060	1,104	3,182
4 Field Assistants		389	1,188	1,272	1,336	3,796
2 Laboratory Assistants		98	594	636	668	1,898
1 Tracer		104	297	318	334	949
1 Clerical Officer		49	297	318	334	949
Non-Established staff		1,000	5,000	5,000	5,000	1,5000
TOTAL		4,359	17,192	17,594	17,960	52,746
9 Running Expenses						
Topographic Base Maps inc. aerial photography		-	-	500	500	1,000
Transport & Travelling		700	3,250	2,250	2,250	7,750
M. and R.E.		700	2,250	2,250	2,250	6,750
Tools and Materials		100	500	500	500	1,500
Pitting & Diamond Drilling (2)		300	1,500	11,500	1,500	14,500
Uniforms and Protective clothing		60	100	100	100	300
Drawing Office expenses		100	250	250	250	750

(Running Expenses Cont'd)

	Notes	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
Laboratory expenses and analysis		750	3,000	3,000	3,000	9,000
TOTAL		2,710	10,850	20,350	10,350	41,550
	TOTAL	7,070	33,992	39,944	29,060	102,996

(b) Notes on Expenditure

(1) All the staff referred to in this project are presently employed under the "Economic Mineral Survey" project.

(2) Additional drilling and ground survey costs associated with Stage 2 of the anticipated United Nations Airborne Geophysical Survey Project, Stage 1 of which is expected to be carried out in 1970.

(c) Import Content

	Notes	Jan-Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 years
Vehicles	-	-	1,200	1,250	-	2,450
Tentage and Camp Equip.		-	750	750	750	2,250
Geophysical apparatus		1	2,500	-	-	2,500
Ore-microscope		-	1,500	-	-	1,500
Petrol, Oil, etc.		500	1,000	1,000	1,000	3,000
Tools		50	450	450	450	1,350
Drilling bits and spares		100	1,200	1,200	1,200	3,600
Drawing office materials		80	200	200	200	600
Laboratory materials		500	3,000	3,000	3,000	9,000
TOTAL		1,231	11,610	7,890	6,600	26,250

(d) Breakdown of Expenditure by Regions

The project covers the whole country but most expenditure will be incurred at Head Office, Zomba.

3. LOCATION OF CONSTRUCTION

None.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : PHOTOGRAMMETRIC MAPPING SERVICES

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT & CABINET/ SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : NEW PROJECT

BRITISH AIDED PROJECT NO. : NEW PROJECT

RELATED PROJECTS : Agricultural & irrigation projects, town planning, land development and township mapping.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
2 Buildings	-	18,936	12,936	-	31,872
6 Plant & Vehicles	-	2,780	2,780	-	5,560
7 Other Equipment	-	1,290	2,210	-	3,500
8 Personal Emoluments	-	2,402	9,809	13,044	25,255
9 Running Expenses	-	1,590	4,970	6,720	13,280
TOTAL	Nil	26,998	32,705	19,764	79,467
21 Housing		12,936	12,936	-	25,872
22 Other Buildings		6,000	-	-	6,000

(b) Non-British, Non-Malawi Expenditure

In order to retain Departmental standardisation it is essential that Wild equipment manufactured in Switzerland is purchased. Considerable savings will also result if aerial survey and computer services are obtained from sources near at hand.

(c) Previous expenditure Nil

(d) Source of Finance Proposed for U.K. Development Loan

2. PROJECT TARGET

To provide photogrammetric mapping at medium and large scales for Development Projects generally and in particular for Land Development Schemes, by recruiting and training additional staff for shift working on present photogrammetric plotting machines together with field support staff,&by making provision for future machine installation to keep pace with increasing demand.

EXPECTED COMPLETION DATE

This is a continuous project and will be absorbed into revenue account as funds permit.

3. BACKGROUND INFORMATION

The Department of Surveys is already geared to revise the national medium and small scale map series. It also controls the photogrammetric resources relating to the Lilongwe Land Development Scheme and the Salima Lakeshore Project. However there will be no spare capacity on the machines installed for these projects to undertake any additional mapping for some years to come, unless a system of shift work is introduced, and even then it will not be possible within existing resources to cope with the increasing demands for large scale maps for irrigation, land use, town planning, physical planning etc.

The proposed Photogrammetric Mapping Service is intended to provide, at relatively short notice, maps where they are needed urgently, and to provide support staff for land survey work related to particular development projects. By also running a parallel training course it would be intended to build up a nucleus of local operators fully skilled in photogrammetric techniques.

4. PROPOSED WORK 1970/73

Mapping will be required for further Lakeshore irrigation schemes. There is a proposal for extended tea production by irrigation in Cholo/Mlanje, and mapping will also be required for other agricultural development projects. The Department of Physical Planning is anxious for maps of the Fort Johnston, Cape Maclear and Salima areas for regional planning, and Town Planning require large scale maps for traditional housing areas in Blantyre and Lilongwe, as well as of the Liwonde area which is to be developed as the main road/rail junction on the newly completed Nacala link railway.

To produce these maps funds will be required in the first instance for skilled staff to operate those plotting machines already installed in the Department, (2 Wild A8's, 1 B8 and 1 Kelsh Plotter) on a shift basis to obtain maximum productivity. Support field staff and transport will also be required in order to cope with the additional ground control and field completion work.

Staff requirements will be as follows:

	1970/71	1971/72
Staff Surveyor (P.O.)	-	1
Chief Photogrammetrist (C.T.O.)	1	-
Senior Photogrammetrist (S.T.O.	1	-
Senior Cartographer (S.T.O)	-	1
Surveyors	1	1
Photogrammetrists	2	-
Cartographers	1	3
Technical Assistants	3	5
Drivers	2	2
Labourers	10	10

Running expenses will be incrurred on the following:-

(1) Transport and Travelling
(2) Maintenance and Running Expenses of Motor Vehicles
(3) Aerial photography and diapositives
(4) Drawing office materials
(5) Computer service for aerial triangulation (probably available in Malawi from Malawi Railways Ltd.).
(6) Tents, camp equipment and uniforms.

5. JUSTIFICATION FOR PROPOSED WORK

Mapping is essential for all development. As a country advances economically so the requirement for larger-scale and more sophisticated maps increases. These maps can be provided commercially but normally there is a considerable time lag between order and delivery, especially as there is no air survey company operating in Malawi. Further, once a contract has been let it is virtually impossible to change the specifications for the mapping or to have any control over the rate at which the maps are produced.

With a fully self contained photogrammetric unit under the control of the Department of Surveys, priorities can be switched, greater flexibility can be achieved, standards of mapping controlled, revision undertaken and a better and in the long run cheaper service provided.

6. EXECUTION AND SUPERVISION

The Project would be controlled by the Principal Surveyor (Trig. and Topo.) who in addition to being fully qualified professionally on the Land Survey side is also qualified in the Photogrammetric field.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : PHOTOGRAMMETRIC MAPPING SERVICES

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/ SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : NEW PROJECT

BRITISH AIDED PROJECT NO. : NEW PROJECT

1. PROJECT OFFICER : Principal Surveyor (Trig. and Topo.)
Execution by staff specially recruited for the project with support from departmental staff.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	1970/71	1971/72	1972/73	Total 3 Yrs.
2 Buildings					
Extension to Office Accommodation	(1)	6,000	-	-	6,000
Housing	(2)	12,936	12,936	-	25,872
		18,936	12,936	-	31,872
6 Plant & Vehicles	(3)				
2 x 3 Ton Trucks		1,550	1,550	-	3,100
2 x L.W.B. Landrovers		1,230	1,230	-	2,460
		2,780	2,780	-	5,560
7 Other Equipment					
1 Picture Carrier for B8(4)		-	400	-	400
2 Facit Calculators		350	350	-	700
1 Wild T2E Theodolite		-	550	-	550
2 Wild Levels & Staves		360	-	-	360
Tents & Camp Equipment		330	660	-	990
Miscellaneous Survey Equipment		250	250	-	500
		1,290	2,210	-	3,500
8 Personal Emoluments					
1 Staff Surveyor (P.O.)	(7)	-	1,620	1,660	3,280
1 Chief Photogrammetrist (CTO)	(5)	390	1,573	1,623	3,586
1 Senior Photogrammetrist (S.T.O.)	(6)	325	1,313	1,363	3,001
1 Senior Cartographer (S.T.O.)		-	325	1,313	1,638
2 Surveyors (T.O.)	(7)	122	610	817	1,549
2 Photogrammetrists (T.O.)		597	828	870	2,295
4 Cartographers (T.O.)		244	1,220	1,996	3,460
8 Technical Assistants		224	820	1,402	2,446
4 Drivers		150	450	600	1,200
20 Labourers		350	1,050	1,400	2,800
		2,402	9,809	13,044	25,255

(Continued on page 4)

	Notes	1970/71	1971/72	1972/73	Total 3 Yrs.
9 **Running Expenses**					
Aerial Photography	(8)	500	1,500	2,000	4,000
Diapositives		200	400	400	1,000
Drawing Materials etc.		200	800	1,000	2,000
Computer Service for Aerial Triangulation		400	800	1,200	2,400
Transport & Travelling		80	450	600	1,130
M. & R.E.M.V.		150	900	1,200	2,250
Uniforms		60	120	120	300
Replacement of Motor Vehicles		-	-	-	-
Replacement of Tents		-	-	-	-
Replacement of Survey Equipment		-	-	200	200
		1,590	4,970	6,720	13,280
TOTAL		26,998	32,705	19,764	79,467

(b) **Notes on Expenditure**

(1) The planned extension is 2,150 sq.ft., to provide additional offices for supervisory staff, additional space in the photogrammetric laboratory for cartographic activities associated with the work and for a supervisor's enclosure, additional storage facilities for films and diapositives, etc.

(2) Initial housing requirements are 2 CH 10's at £M4,200 plus 4 EH 5's at £M840, to be repeated in 1971/72. An additional 10% has been allowed for increased prices.

(3) For additional ground control and field completion.

(4) Picture carriers for the B8 to extend its application to include super wide angle photography, the use of which can lead, in suitable cases, to savings which will soon pay for the cost of this accessory.

(5) A Chief Photogrammetrist has been provided for to co-ordinate not only the photogrammetric mapping which is the subject of this submission but all the photogrammetric processes involved in the Department. Equipment under his control would be 3 A.8's, 1 B8, 1 Kelsh Plotter, 1 E.K.5 and 1 P.U.C.3, and the full staff complement would be 1 Chief Photogrammetrist, 2 Senior Photogrammetrists, 7 Photogrammetrists, 1 Senior Cartographer, 4 Cartographers and 6 Technical Assitants.

(6) A Senior Photogrammetrist is asked for who will work in conjunction with the present Senior Photogrammetrist (Lilongwe Scheme) to provide shift supervision and to ensure a steady output of work during the initial training period, which for Photogrammetrists will be a minimum of 2 years.

(7) The Staff Surveyor and 2 Surveyors (T.O.) will provide the necessary ground control and will assist in field annotation after the maps have been produced. 2 T.A.s will be used to observe low order levelling for height control which is a standard feature of large scale work.

(8) The relatively small sum allowed for aerial photography anticipates companies based in Africa undetaking the photographic contracts.

(c) Import Content

	1970/71	1971/72	1972/73	Total 3 Yrs.
Buildings (at 10%)	1,894	1,294	-	3,188
Vehicles	2,780	2,780	-	5,560
Equipment	1,290	2,210	-	3,500
Running Expenses	1,300	4,400	5,800	11,500
TOTAL	7,264	10,684	5,800	23,748

(d) Breakdown of Expenditure by Region

It is anticipated that most of the expenditure will be on mapping for the Central and Southern Regions.

3. LOCATION OF CONSTRUCTION

The base for operations will be in Blantyre, where all new buildings will be constructed.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS : DIRECTORATE OF OVERSEAS SURVEYS (Previously "Aerial Survey")

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 80, ITEM 61

RELATED PROJECTS : Map Revision and Reproduction, Survey Control for Irrigation, and Land Development Projects

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
10 Special Expenditure	800	4,000	4,000	4,000	12,000
TOTAL	800	4,000	4,000	4,000	12,000

(b) Non-British, Non-Malawi Expenditure: Not applicable

(c) Previous Expenditure

	Cumulative Total
To 31/12/1968	31,053
1969 Printed Estimates	2,000
1969 Revised Estimates	5,368
1969 Estimated Carry forward	Nil

(d) Source of Finance: Local Resources

2. PROJECT TARGET

These funds are required to provide a 15% contribution to the programme of work undertaken for Malawi by the United Kingdom Directorate of Overseas Surveys in the mapping and survey fields.

Expected Completion Date: Continuing project which will be absorbed into Revenue Account when possible.

3. BACKGROUND INFORMATION

The Directorate of Overseas Surveys have been working in Malawi for a considerable number of years providing ground control for the standard 1/50,000 map series and basic triangulation for national surveys. This work is an important supplement to Departmental trigonometrical and topographical survey work.

4. PROPOSED WORK 1970/73

Continuation of ground control and triangulation in development areas such as Salima, Nkhotakota and Karonga, and further mapping at scales larger than 1/50,000 in special areas of importance.

/5...

5. JUSTIFICATION FOR PROPOSED WORK

Without accurate maps, land use, irrigation and urban development schemes cannot be planned, and the Directorate of Overseas Surveys provides services to Malawi which at present cannot be undertaken within its own resources.

6. EXECUTION AND SUPERVISION

Work will be undertaken by the Directorate of Overseas Surveys and the programme will be controlled by the Director of Surveys.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS: DIRECTORATE OF OVERSEAS SURVEYS (Previously "Aerial Survey")

RESPONSIBLE MINISTRY/DEPARTMENT : OFFICE OF THE PRESIDENT AND CABINET/SURVEYS

MALAWI DEVELOPMENT ESTIMATES, 1969: HEAD 80, ITEM 61

1. PROJECT OFFICER: Director of Surveys

   Execution by Directorate of Overseas Surveys.

2. FINANCIAL DETAILS

   (a) Details of Expenditure

	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 years
10 Special Expenditure	800	4,000	4,000	4,000	12,000
TOTAL	800	4,000	4,000	4,000	12,000

   (b) Notes on Expenditure

   Based on agreed programme of two full parties costing approximately £22,000 p.a.

   15% contribution = £3,300 p.a. plus allowance for contingencies.

   (c) Import Content

   All payments will be made in the U.K.

   (d) Breakdown of Expenditure by Region

   Nil.

3. LOCATION OF CONSTRUCTION

   Nil.

HEAD 81

VETERINARY SERVICES

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : LIVESTOCK MARKETING (FORMERLY CATTLE MARKETING)

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 81 ITEM 1

BRITISH AIDED PROJECT NO. : 36A

RELATED PROJECTS : Disease Control

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	5,000	2,120	-	-	2,120
3 Water Supplies	4,000	3,650	-	Transferred	3,650
5 Other Construction	-	11,380	2,715	to	14,095
6 Plant and Vehicles	-	6,380	2,600	Revenue	8,980
7 Other Equipment	-	5,150	1,150	Account	6,300
8 Personal Emoluments	1,853	7,414	7,488		14,902
9 Running Expenses	1,705	8,430	8,830		17,260
TOTAL	12,558	44,524	22,783		67,307
*22 Other Buildings		2,120	-		2,120

(b) Non-British, Non-Malawi Expenditure

Nil

(c) Previous Expenditure

	£	Cumulative Total
To 31/12/67	33,807	33,807
1968 Actual Expenditure	23,577	57,384
1969 Printed Estimates	54,150	
1969 Revised Estimates (Incl. 1968 c/f)	46,196	
1969 Estimated Carry-forward	10,360	
Of which : Jan/Mar 1970	10,360	

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

To construct additional livestock markets and cattle route kholas and to complete the development of necessary holding grounds.

Expected Completion Date:

Continuing project, to be transferred to Revenue Account as soon as possible.

3. BACKGROUND INFORMATION

The need to encourage the rapid development of the livestock industry has been recognised for some years and an initial project for cattle holding and marketing facilities was financed from Colonial Development and Welfare funds. The project was based on the reconstruction of the holding ground at Mpemba together with the purchase of weighbridges and cattle transporters.

The scheme is a continuation of the C.D. & W. project. It is planned to set up a chain of cattle markets and night stop kholas (a pen or kraal for holding cattle overnight) on the main drovers' routes from markets to abattoirs or railhead. With improved marketing facilities, the number of animals available for slaughter and for fattening is increasing; this is stimulating the producer to better methods of husbandry.

Goats, pigs and sheep make a substantial contribution to the diet of the people and it is planned to provide marketing facilities for small animals, to encourage production. The title of the project has therefore been changed from Cattle Marketing to Livestock Marketing.

4. PROPOSED WORK 1970/73

The proposed programme for the 1970/73 period is as follows :-

1970/71 Northern Region : Three additional cattle markets;
Ten additional cattle route kholas.

Southern Region : Two additional cattle markets;
Enlargement of two cattle markets.

All Regions : Continued development of holding grounds.

Provision has been made for two holding grounds in the Lower River, one at Chiromo on the east bank and one at Bangula on the west of the Shire River, each near railway station, for holding cattle purchased at markets and awaiting dispatch by railway to the Blantyre abattoir.

1971/72 : Completion of development of holding grounds.

5. JUSTIFICATION FOR PROPOSED WORK

The main consumer markets for meat are in the Southern Region, while the livestock populations are concentrated chiefly in the Central and North.

Severe shortage of holding capacity for reserve slaughter stock has been experienced in recent years. The additional markets proposed for the Northern Region will result in increasing numbers of stock being moved south through Mchenga and Kuti holding grounds in the Central Region. In order to provide adequate facilities for this development, holding grounds must be expanded.

Provision has been made for a holding ground near Lilongwe where reserve slaughter cattle can be kept for the new abattoir. 5,000 stall feeders will be required annually for the Lilongwe Land Reorganisation Scheme. A reservoir of these animals will have to be kept at the holding ground to ensure continuity of supply. The cattle coming forward from Northern Region and the improved control of T.B. and East Coast Fever in that region will demand increased holding facilities in that region.

6. EXECUTION AND SUPERVISION

The scheme will be executed by the Livestock Marketing Officer and Regional Veterinary Officers directed in detail by the Senior Animal Husbandry Officer in accordance with the policies laid down by the Director of Animal Health and Industry.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LIVESTOCK MARKETING (FORMERLY CATTLE MARKETING)

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 81 ITEM 1

BRITISH AIDED PROJECT NO. : 36A

1. PROJECT OFFICER

The Director of Animal Health and Industry through the Senior Animal Husbandry Officer.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/72		TOTAL 3 Yrs.
2 Buildings							
Office/Store (M)	(1)		620	-			620
Farm Labour Quarters (M)	(2)	5,000	500	-			500
Sheds (M)	(3)		1,000	-			1,000
		5,000	2,120	-			2,120
3 Water Supplies							
Boreholes	(4)	3,000	1,200	-			1,200
Water Reticulation (M)	(5)	1,000	2,450	-			2,450
		4,000	3,650	-			3,650
5 Other Construction							
Cattle Marketing (M)	(6)	-	2,500	-			2,500
Cattle Kholas (M)	(7)	-	3,950	-			3,950
Fencing (M)	(8)	-	1,750	-			1,750
Telephone Lines (P)	(9)	-	100	100		Account	200
Pastures (M)	(10)	-	3,080	2,615			5,695
		-	11,380	2,715			14,095
6 Plant and Vehicles							
Landrovers	(11)	-	3,300	1,100		Revenue	4,400
Tractors (at 1280)		-	1,280	-			1,280
Trailers (at 300)		-	300	-			300
Farm Implements		-	1,500	1,500			3,000
		-	6,380	2,600			8,980
7 Other Equipment							
Cattle Weighing Scales	(12)	-	5,000	1,100	&		6,100
Marketing Office Equipment		-	150	50			200
		-	5,150	1,150			6,300
8 Personal Emoluments							
Development Assistants		42	168	179		Transferred	347
(C.R. 1 @ £M.157 x 11)							
Clerks (3 @ £M168 x 11)		134	537	570			1,107
Drivers	(13)	531	2,125	2,125			4,250
Labour	(14)	1,146	4,584	4,614			9,198
		1,853	7,414	7,488			14,902
9 Running Expenses							
M. & R.E.	(15)	1,000	3,875	3,875			7,750
Transport & Travelling	(16)	705	1,200	1,300			2,500
Maintenance of Cattle Markets and Kholas	(17)	-	1,745	1,985			3,730
Tools and Materials		-	1,610	1,670			3,280
		1,705	8,430	8,830			17,260
TOTAL		12,558	44,524	22,783			67,307

(M) = As costed for construction by the Veterinary Department

(P) = As costed for construction by Post Office.

Estimated Revenue	1970/71	1971/72	1972/73
Cattle transport and grazing fees	8,000	9,000	10,000
(b) Notes on Expenditure			
(1) Offices/Stores: Chiromo			
Holding Ground (Nsanje District)	620	-	-
(2) Farm Labour Quarters			
Northern Region	500	-	-
(3) Sheds			
1 Mchenga Holding Ground	250	-	-
1 Northern Region	750	-	-
Total Category 2	2,120	-	-
(4) Boreholes			
1 Northern Region	650	-	-
Engine and Pump	550	-	-
(5) Water Reticulation			
Northern Region - Tanks	500	-	-
Piping	650	-	-
Troughs	150	-	-
Installation	150	-	-
Lilongwe - Piping Installation	1,000	-	-
Total Category 3	3,650	-	-
(6) Cattle Markets			
3 Chitipa - Karonga (N.R.) at £400	1,200	-	-
2 Ft.Johnston - Namwera areas (S.R.) at £400	800	-	-
2 Enlargement (S.R.) Ngabu at £250	500	-	-
(7) Cattle Kholas (Route Kholas at £125)			
7 Karonga (N.R.)	875	-	-
3 Chitipa (N.R.)	375	-	-
Khola Holding Grounds			
Northern Region	2,200	-	-
Lilongwe	500	-	-
(8) Fencing			
Northern Region - 4 miles paddock @ £125	500	-	-
Lilongwe H.C. - 4 miles perimeter @ £150	600	-	-
Approximately 5 miles paddock @ £125	650	-	-
(9) Telephone Lines			
Salima - Kuti (10 miles)	100	100	-
(10) Pastures			
Kuti	1,080	1,350	-
Mchenga	500	775	-
Northern Region	1,000	490	-
Lower River	500	-	-
Total Category 5	11,380	2,715	-

	1970/71	1971/72	1972/73
(11) Landrovers			
1 Addition	1,100	-	-
3 Replacements	2,200	1,100	-
	3,300	1,100	-
(12) Cattle Weighing Scales			
Northern Region (3 Fixed)	3,000	-	-
Central Region (1 Portable)	-	550	-
Southern Region (1 Fixed) (1 Portable) replacement	2,000	550	-
	5,000	1,100	-
(13) Drivers			
Lorry Drivers (at £200) 2 S.R., 2 C.R., 2 N.R.	1,200	1,200	-
Tractor Drivers (at £185) Central Region (5)	925	925	-
	2,125	2,125	-
(14) Labour			
Holding Grounds	3,800	3,800	-
Chiromo	200	200	-
Markets	584	614	-
	4,584	4,614	-
(15) M. and R.E.			
Landrovers			
4 at £300	1,200	1,200	-
Transporters (used as lorry temporarily)			
1 Northern Region	250	250	-
1 Central Region	300	300	-
1 Livestock Marketing.	450	450	-
Lorry - Central Region	250	250	-
Tractors			
5 at £285 Central Region	1,425	1,425	-
	3,875	3,875	-
(16) Transport and Travelling			
Northern Region	350	400	-
Central Region	400	400	-
Southern Region	250	250	-
Livestock Marketing	200	250	-
	1,200	1,300	-
(17) Maintenance of Cattle Markets and Kholas.			
Markets			
Northern Region	400	400	-
Central Region	420	445	-
Southern Region	325	375	-
Kholas			
Northern Region (16)	285	435	-
Central Region (13)	210	210	-
Southern Region (5)	75	75	-
South Vipya	30	45	-
	1,745	1,985	-

(c) Import Content

See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Region

	Jan/March 1970			1970/71			1971/72		
Category	S	C	N	S	C	N	S	C	N
2 Buildings	1000	3000	1000	620	250	1250	-	-	-
3 Water Supplies	-	3000	1000	-	1000	2650	-	-	-
4 Roads and Bridges	-	-	-	-	-	-	-	-	-
5 Other Construction	-	-	-	1800	4740	4840	-	2715	-
6 Plant and Vehicles	-	-	-	1100	4180	1100	1100	1500	-
7 Other Equipment	-	-	-	2000	-	3150	600	550	-
8 Personal Emoluments	617	619	617	909	5422	1083	920	5444	1124
9 Running Expenses	550	655	500	2235	4195	2000	2395	4220	2215
TOTAL	2167	7274	3117	8664	19787	16073	5015	14429	3339

3. LOCATION OF CONSTRUCTION

Borehole - Mchenga - Kasungu District by Department of Geological Survey.
All other work by Department of Veterinary Services.

Kasung
Rusa
MCHINJI
Tembwe

REPUBLIC OF MALAWI

DEPARTMENT OF VETERINARY SERVICES

CATTLE MARKETS AND TRADE ROUTES

Cattle Markets

Proposed Cattle Markets

Holding Grounds

Cattle Route Khola

Proposed Cattle Route Khola

Railway Station

Kaseye
Ngara
thalile
Bwengu
Kazuni
Choma
Gowoka
imba
Mtangatanga
Phazi
Mchenga
Mponela
Dowa
Kuti
alindi
Chikuse
Salima
Lilongwe
Namitete
Linthipe
Nathenje
Namaguya
Chipazi
Ntakataka
Dedza
Namwera
Fort Johnston
Bilila
Kwataine
Mikoko
(Under Construction)

Mzimb

Kasungu

Rusa

Ma

Tembwe

Railways

Principal Roads

17°

33°

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1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : DISEASE CONTROL

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 2

BRITISH AIDED PROJECT NO. : 36B

RELATED PROJECTS : All other Veterinary Projects especially Veterinary Laboratory.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	2,500	44,700	41,700	30,700	117,100
5 Other Construction	-	2,750	5,625	-	8,375
6 Plant and Vehicles	-	3,000	3,000	3,000	9,000
7 Other Equipment	1,000	1,970	4,730	3,970	10,670
8 Personal Emoluments	3,650	20,607	23,038	24,916	68,561
9 Running Expenses	5,000	35,000	36,000	37,000	108,000
TOTAL	12,150	108,027	114,093	99,586	321,706
*21 Houses		16,700	16,700	10,700	44,100
22 Other Buildings		28,000	25,000	20,000	73,000

(b) Non-British, Non-Malawi Expenditure:

	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
Rabies Vaccine	-	10,000	9,000	8,000	27,000

(c) Previous Expenditure

	£	Cumulative Total
To 31/12/67	40,191	40,191
1968 Actual Expenditure	34,247	74,438
1969 Printed Estimates	68,995	-
1969 Revised Estimates	58,399	-
1969 Estimated Carry-forward	10,596	-
of which: Jan/Mar. 1970	10,596	-

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

(1) To have a belt of cattle permanently immune to foot and mouth disease in the extreme north of Malawi to act as a barrier against the spread southwards of that disease from Tanzania.

(2) To eradicate East Coast Fever and Tuberculosis of cattle from Malawi and to increase the dipping facilities for controlling Red Water Fever, Anaplasmosis and Heart Water.

(3) To protect the public as far as possible from the dangers of rabies in wild carnivores and stray dogs.

Expected Completion Date

The facilities for disease control will be completed by 1972 but the desired eradication of the diseases will depend on the recruitment and training of adequate Malawian professional and technical staff. Running costs will be transferred to Revenue Account as soon as possible.

3. BACKGROUND INFORMATION

The main objective of this project has been to control animal diseases in an effort to secure a permanent base for an expanded animal industry.

In the light of the development of the livestock industry and the introduction of exotic breeds of cattle to village farms, particularly in the dairy industry where cross-breeding has already started, disease control measures must increase. Disease control must be regarded as an essential element of the development of the livestock industry. The future successful development of the industry will be dependant directly on the effective control and final eradication of Tuberculosis and East Coast Fever in the Central and Northern Regions and the prevention of Foot and Mouth Disease outbreaks in the Northern Region.

The opening of cattle markets in the Northern Region, where there is a substantial reserve of slaughter cattle, introduces serious disease problems, particularly with the three main diseases already mentioned.

Relevant Statistics

(1) Rabies Vaccinations:	1963	31,724
	1964	59,904
	1965	83,697
	1966	91,267
	1967	129,020
	1968	97,950
	1969	100,000 (Est.)
(2) B.C.G. Vaccination:	1966	14,124
	1967	22,103
	1968	41,948
	1969	60,000 (Est.)
(3) Dip Tanks built:	1964	10
	1965	7
	1966	1
	1967	1
	1968	7
	1969	9
(4) Cattle Population Increase	1964	411,419
	1967	464,006
	1968	479,916

In addition it was hoped to achieve 30,000 Foot and Mouth vaccinations, have 10 Dip Tanks repaired and renovated and to build 50 Cattle Crushes in 1969.

4. PROPOSED WORK 1970/73

Foot and Mouth Control Unit

There is a grave risk of spreading the Foot and Mouth disease, which periodically breaks out in the Karonga Lakeshore area, to the south, unless the animals are regularly vaccinated.

As the disease is endemic in Tanzania, from where it periodically spreads into Karonga District, and the strain of the particular virus is known, it is possible to vaccinate the animals against this disease. The Foot and Mouth vaccination Unit is based in Karonga. The Unit consists of Foot and Mouth control equipment comprising, air freight equipment for Foot and Mouth vaccine, refrigerators, field laboratory equipment, Foot and Mouth vaccine field carrying equipment and a Veterinary team consisting of one Technical Officer, one Senior Technical Assistant, four Technical Assistants, one driver and two labourers. The team is equipped with a L.W.B. Land Rover, small trailer and camping equipment and is completely mobile in order to be able to vaccinate 30,000 cattle annually in the area between the Songwe River, on the Tanzania - Malawi border, and the Karonga/Chitipa road. In 1970/71 the animals will require to be vaccinated twice and thereafter once every year. Special vaccine to suit the local strain of Foot and Mouth will be imported from U.K. Additional cattle crushes will be constructed at the rate of 10 a year. In addition to routine vaccinations the team will carry out routine patrols in this area. A professional officer will also engage in this work. This Officer is applied for as a new Development post and will be referred to again in the Notes. He will also supervise East Coast Fever Eradication areas in Northern Region and Tuberculin testing and B.C.G. vaccination in connection with the Tuberculosis control descibed below.

East Coast Fever Control Team

East Coast Fever cases have been increasing in recent years and with the increasing number of cattle moving south from the Central and Northern Regions for slaughter in Blantyre, efforts to control the disease in the endemic areas must be intensified.

The disease is widespread throughout the Central and Northern Regions. East Coast Fever causes the greatest amount of mortality of any cattle disease in Malawi.

The development of the cattle industry must be accompanied by a maximum effort towards greater control of this disease with the aim of complete eradication of East Coast Fever in this country.

The hand dressing, in addition to routine dipping, of cattle with insecticides started in 1969 in the Central Region and will be extended annually. In 1970 to 1972 this scheme will operate in the Northern Region as well as in Central Region.

More detailed information is required on the causes of mortality, facts on dipping, facts on hand dressing etc., with a view to assessing the costs of concentrated and more intensive measures of tick control to be applied to the whole of the Central and Northern Regions. One East Coast Fever Control Team was formed in 1969 to operate in the Central Region and one will be formed in 1970 for the Northern Region.

One of the three proposed new professional posts will control the work of the Central and Northern Regions control teams, with special reference to investigations.

Each team will consist of a Technical Officer, Senior Technical Assistant, four Technical Assistants and two labourers and will be equipped with a Land Rover trailer and field equipment to be fully mobile.

The teams will operate in defined areas. The team will be responsible for proper dipping, hand dressing and the recording of details of the herds within the area. A full time team is necessary to ensure proper application of the insecticides and accurate recording of details of the herds for proper costing, which is required for the planning of the East Coast Fever eradication programme.

It has been observed over many years that East Coast Fever incidence and mortality is inversely proportional to the dipping percentage. Of the districts of the Central and Northern Regions in which East Coast Fever is endemic, Ncheu and Karonga have the lowest incidence and the highest dipping percentage. Eradication measures will concentrate on pushing the cleared front northwards through Ncheu and Dedza towards Lilongwe, and on clearing Karonga of E.C.F. and Foot and Mouth.

Legislation to ensure compulsory dipping and to gazette E.C.F. eradication areas was published in September 1969.

Tuberculosis Control

Annual vaccination will continue along with immunity tests to assess results and detailed records of disease distribution. One of the three Veterinary Officer posts proposed will be in charge of this work in the field and liaise with the Chief Veterinary Investigation Officer and the Laboratory Superintendent. Consideration is being given to gazette eradication areas as with East Coast Fever.

Rabies Control

The efforts at controlling Rabies will have to be stabilized at the existing rate of 100,000 vaccinations per annum, but now that the new Prevention of Rabies Rules, March 1969, have been published, which provides for the compulsory ear tattooing of vaccinated dogs, and now that the Ministry of Local Government has agreed to reintroduce dog licensing into the major towns, it is hoped that some progress will be made and a more economical use made of the vaccine purchased under Loan funds. The control of Rabies in the major townships has an importance far greater than the immediate domestic affect, in that tourists and other visitors are more likely to feel at ease.

Laboratory

The existing Laboratory in Blantyre is over crowded and ill equipped. The original plan for repair and re-equipment is seen to be too modest and a new Laboratory at the heart of the E.C.F. problem at Lilongwe in Central Region is now planned. Advise has been sought on design and costings but the suggestions made were unfortunately beyond the financial resources available. It will accordingly be necessary to erect and equip a small field Laboratory at the Regional Headquarters in Lilongwe for East Coast Fever diagnosis, Toxaphene dip testing and sundry other routine procedures, which will relieve the pressure on the main Laboratory at Blantyre while external aid is sought for the longer project (see Veterinary Laboratory Project).

At the same time the existing Laboratory at Blantyre will have to have some work done on it, so that it can cope with the increasing work arising from the B.C.G. vaccinations and Tuberculosis Control Schemes. Cultures of Tuberculosis will have to be maintained, facilities for typing of Tuberculosis lesions will have to be increased and there will have to be extensive provision for further small animal accommodation.

Attempts to set up satisfactory routine diagnostic methods for African Swine Fever and Fluorescent Anti-body techniques for Rabies diagnosis have not been altogether successful, due in main to the unsatisfactory nature of the accommodation. A small Isolation Unit where a known susceptible pig can be introduced for the biological diagnosis of African Swine Fever will obviously prove a more practicable approach to the problem and this will have to be done.

5. JUSTIFICATION FOR PROPOSED WORK

Unless endemic diseases are controlled, the value of livestock improvement projects becomes questionable.

6. EXECUTION AND SUPERVISION

The scheme will be executed by the three Regional Veterinary Officers directed in detail by the Deputy Director of Veterinary Services in accordance with the policies laid down by the Director. They will each be assisted by one of the three Veterinary Surgeons, provision for which is included in the Personal Emoluments for 1970/71.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : DISEASE CONTROL

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 81 ITEM 2

BRITISH AIDED PROJECT NO. : 36B

1. PROJECT OFFICER

The Director of Animal Health and Industry.

2. FINANCIAL DETAILS

(a) Details of Expenditure

Category	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings						
Dip Tanks 8 @ £M2000(W)	(1)		16,000	16,000	16,000	48,000
Dip Tanks Renovation 10 @ £M.400 (M)			4,000	4,000	4,000	12,000
P.O. Staff Houses @ £M5000 (W)	(2)	2,500	5,000	5,000	5,000	15,000
P.O. Staff House @ £M.3000 (W)		-	3,000	3,000	3,000	9,000
T.A. Staff Houses @ £M900			2,700	2,700	2,700	8,100
New Laboratory & Equipment	(3)		8,000	5,000	-	13,000
Subordinate Staff Houses (W)			6,000	6,000	-	12,000
		2,500	44,700	41,700	30,700	117,100
5 Other Construction						
Cattle Crushes	(4)		2,750	5,625	-	8,375
6 Plant and Vehicles						
Land Rovers @ £M.1000 (S.W.B.)	(5)		3,000	3,000	3,000	9,000
7 Other Equipment						
Refrigerators			330	330	330	990
Large Deep Freeze	(6)		250	250	250	750
Small Deep Freeze	(6)	1,000	150	150	150	450
Flasks & Cold Boxes			-	1,000	-	1,000
Laboratory Equipment	(7)		-	2,000	2,000	4,000
Tents or Caravans	(8)		1,000	1,000	1,000	3,000
			240	-	240	480
		1,000	1,970	4,730	3,970	10,670
8 Personal Emoluments	(9)					
3 Veterinary Officers (P.O.)		-	4,017	4,017	4,017	12,051
Lab. Superintendent		500	1,402	1,465	-	2,867
Local Counterpart(C.T.O.)		-	-	-	1,399	1,399
3 Disease Control Officers(TO)		150	1,438	1,506	2,000	4,944
50 Development Assistants		2,000	5,150	6,050	6,400	17,600
3 Drivers		500	900	1,000	1,100	3,000
Labour		500	7,700	9,000	10,000	26,700
		3,650	20,607	23,038	24,916	68,561

(a) Details of Expenditure Cont'd

	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
9 Running Expenses	(10)					
Maintenance & R. Expenses		1,000	3,000	3,000	3,000	9,000
Transport & Travelling		1,000	6,000	7,000	8,000	21,000
Tools and Materials		1,000	3,000	3,000	3,000	9,000
B.C.G. Vaccine		500	6,000	7,000	8,000	21,000
Rabies Vaccine		500	10,000	9,000	8,000	27,000
Foot & Mouth Vaccine		500	3,000	3,000	3,000	9,000
Toxapheno Dip for Hand Dressing		500	4,000	4,000	4,000	12,000
		5,000	35,000	36,000	37,000	108,000
TOTAL		12,150	108,027	114,093	99,586	321,706
Revenue						
Dipping Fees		2,250	9,000	9,000	9,000	27,000

(W) = As costed for construction by Ministry of Works and Supplies by Direct Labour.

(M) = As costed for construction by the Veterinary Department.

(b) Notes on Expenditure

(1) Dip Tanks. Cost of a new tank with house for Development Assistant is taken as £M.2,000. This figure will be higher in Northern Region, lower in the South ; for ease of costing a single figure is used. Eight tanks will go in 1970, 8-1971 and 8 - 1972. Ten old dip tanks will be repaired and their houses brought up to standard each year at £M.400 per tank.

(2) Housing. The Veterinary Officer's (C.H.) house is estimated at £M.5,000. The locally based T.O.s for the East Coast Fever and Foot and Mouth Control Teams will be operating from camping sites in the first year and permanent housing will require to be sited later when experience of the control measures, and their success or otherwise has indicated the most strategic sites for building. A Technical Officer's house (DH) is estimated at £M.3,000 and Technical Assistant's (E.H.) at £M.900. The PH2 and PH1 blocks are for the subordinate class Veterinary Scouts in the teams and for the extra Laboratory staff. Institutional housing is essential for such staff.

(3) Laboratory. It is hoped that a completely new building will be constructed in Lilongwe, when funds are available. In the meantime a small field Laboratory will be built in Lilongwe for approximately £4,000 and £4,000 will be used for improving facilities in the Blantyre Laboratory, as explained in the Section 4 of the project submission.

(4) Cattle Crushes. Crushes for B.C.G. and Foot and Mouth Vaccination cost £M.125. The Crushes building programme will be scaled down in 1970/71 because it has been found possible to carry out a lot of the vaccinations at existing Dip Tanks which have been repaired and fitted with small Crushes. A larger sum of money is included in 1971/72, as it is thought by this time work outside the dipping areas may need to commence.

(5) Land Rovers. Three Land Rovers per annum will be required to service the disease control teams and/or, replace earlier vehicles purchased under this plan. The number operating will be 3 each year.

(6) Refrigeration equipment. This is for the Foot and Mouth Control Unit - the vaccine must be kept cold.

(7) Microscopes. for use at diagnostic Laboratories.

(8) Camping equipment. for three field units, one for Foot and Mouth and two for East Coast Fever eradication.

(9) Personal Emoluments

Veterinary Officers. As explained in Section 4 above, three Professional Officers are required, each one to concentrate on the diseases being controlled, so that the Regional Veterinary Officer will have more time for maintaining the routine services of the Department, paying attention to the overall administration of the Development Scheme, liaison with other Departments, Ministry of Works etc., with regards to the building and the sites of the development being carried out. The Veterinary Officer in the north will be particularly concerned with Foot and Mouth Disease and this should be his main interest, but he will also be expected to study the work of the East Coast Fever Control Team and the work of the Tuberculosis Control Team.

In Central Region, the main work of the Professional Officer will be the East Coast Fever control, with particular reference to the Eradication Areas, which will be gazetted before very long. In the Eradication Areas he must satisfy himself that all cattle deaths are diagnosed accurately so that it can be quite certain that East Coast Fever is not the cause. He will also be expected to pay some attention to the B.C.G. Vaccination which will be taking place in the northern part of the Central Region, where it comes into contact with the infected areas of the Northern Region.

The Veterinary Officer in the Southern Region will be mainly interested in Tuberculosis and will be the liaison Professional Officer between the Laboratory, the Slaughter House and the field. It will be his responsibility to see that when T.B. is diagnosed in a carcase, the origin of the animal is traced back and to see whether or not the animal was vaccinated with B.C.G. He will also be responsible for carrying out Tuberculin tests in the Southern Region, so that the whole of the Southern Region may be declared a Tuberculosis Eradication Area. Legislation will be promulgated when the time is appropriate to bring this end about and the Professional Officer will then be responsible for organizing the necessary control measures, Tuberculin testing, slaughter and compensation etc.

Disease Control Officers will be responsible for the Foot and Mouth Control Team in the Northern Region and for the two East Coast Control Teams, one in Northern Region and one in the Central Region.

Development Assistants. The project has constructed 25 Dip tanks in 1968 and will construct 24 more. The existing T.A. grade is therefore below strength and D.A.s will be required until further staff is trained.

(10) Running Expenses

Vaccines. B.C.G. Vaccine costs approximately 1/- a dose and the amounts purchased should be sufficient to vaccinate the annual calf crop in the areas where Tuberculosis is endemic. The amount for Foot and Mouth Vaccine should provide 30,000 doses of a Tri-valent vaccine for routine vaccination in the areas at risk. If a known virus type appears dangerously close in Tanzania, a Mono-valent vaccine will be purchased, but emergency funds from Recurrent Account will probably be available to cover this.

Rabies vaccine is now approximately 1/6 a dose and only part of the annual vaccine requirements will be purchased from Development Account. Toxaphene Dip will be deployed in those areas gazetted East Coast Fever Eradication areas. Tests for dip resistance on the ticks will be carried out by the Laboratory.

(c) Import Content

See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Region

	Jan-Mar 1970			1970/71			1971/72			1972/73		
	S	C	N	S	C	N	S	C	N	S	C	N
2 Buildings	500	1000	1000	6300	29100	9300	11300	21100	9300	3300	10100	17300
5 Other Construction	-	-	-	-	1375	1375	625	2500	2500	-	-	-
6 Plant and Vehicles	-	-	-	1000	1000	1000	1000	1000	1000	1000	1000	1000
7 Other Equipment	330	330	340	470	750	750	1330	1700	1700	1370	1300	1300
8 Personal Emoluments	1220	1220	1210	6869	6869	6869	7680	7679	7679	8306	8305	8305
9 Running Expenses	1500	2000	1500	10000	15000	10000	10000	16000	10000	10000	16000	11000
	3550	4550	4050	24639	54094	29294	31935	49979	32179	23976	36705	38905

3. LOCATION OF CONSTRUCTION

			Central Region	Northern Region	Southern Region
Dip Tanks			4	3	1
P.O. Houses:	Centre	1969/70	T.A. Houses-	½ North	
	North	1970/71		½ Centre	
	South	1971/72			
T.O. Houses	Centre	1969/70	Staff Houses 3 Regions equally		
	North	1970/71			
	Centre	1971/72			

MCHIN

REPUBLIC OF MALAWI

DEPARTMENT OF VETERINARY SERVICES

LOCATION OF DIPPING TANKS

CHITIPA

KARONGA

RUMPI

MZIMBA

NKHATA BAY

NTCHISI

KASUNGU

NKHOTA KOTA

DOWA

SALIMA

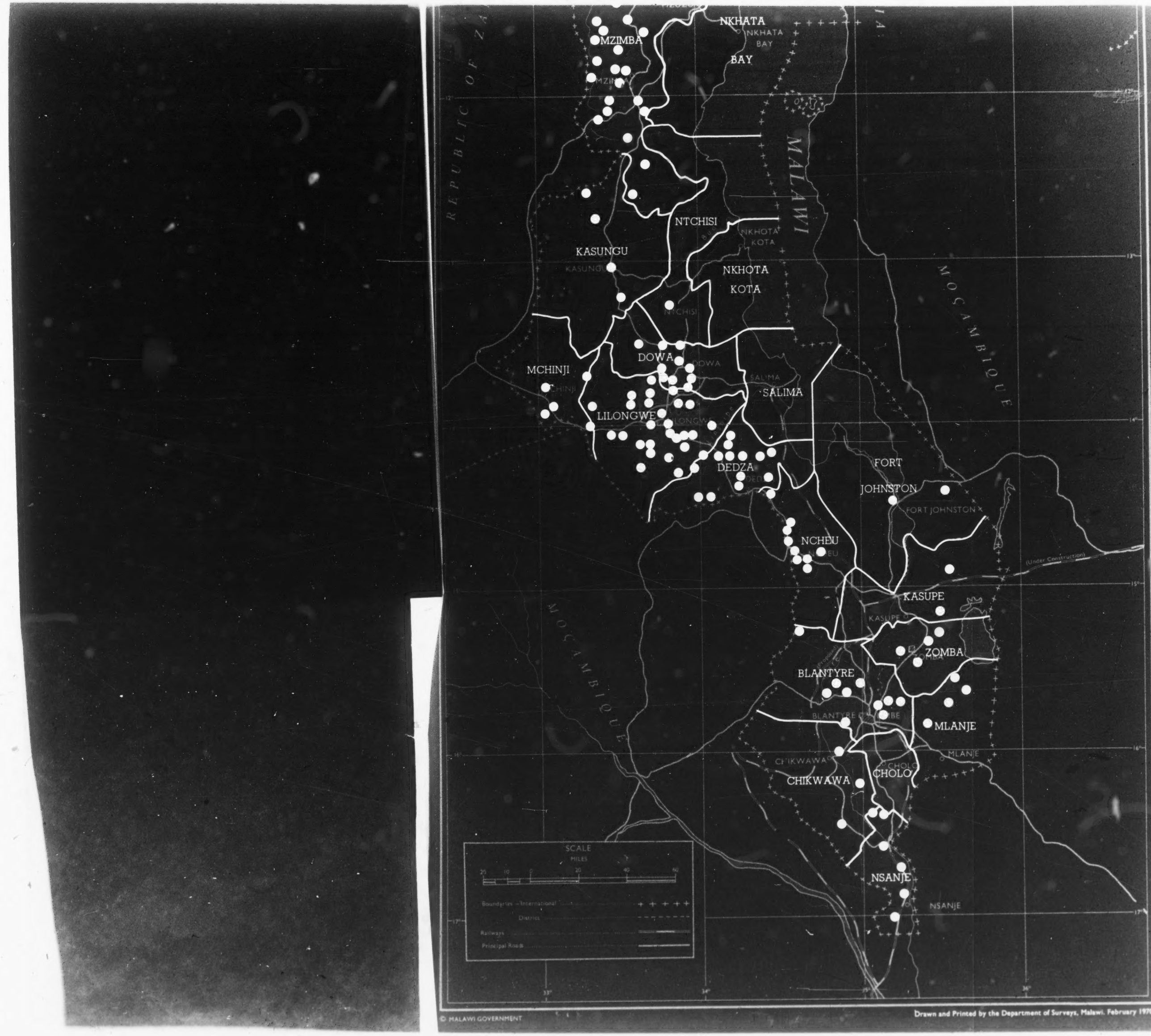
LILONGWE

DEDZA

FORT JOHNSTON

NCHEU

(Under Construction)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MZIMBA
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DOWA
MCHINJI
SALIMA
LILONGWE
DEDZA
FORT JOHNSTON
NCHEU
KASUPE
ZOMBA
BLANTYRE
MLANJE
CHIKWAWA
CHOLO
NSANJE
(Under Construction)
REPUBLIC OF ZAMBIA
MALAWI
MOCAMBIQUE
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Boundaries – International
District
Railways
Principal Roads
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1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : VETERINARY STAFF TRAINING

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 3

BRITISH AIDED PROJECT NO. : 36E

RELATED PROJECTS : All Veterinary Projects

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	-	9,100	500	-	9,600
3 Water Supplies	-	3,000	-	-	3,000
6 Plant and Vehicles	-	-	2,500	-	2,500
7 Other Equipment	-	530	550	-	1,080
8 Personal Emoluments	280	957	2,673	Revenue	3,630
9 Running Expenses	309	1,400	1,525	Account	2,925
TOTAL	589	14,987	7,748	-	22,735
*21 Houses	-	5,000	-	-	5,000
22 Other Buildings	-	4,100	500	-	4,600

(b) Non-British, Non-Malawi Expenditure

Nil

(c) Previous Expenditure

	£	Cumulative Total
To 31/12/67	1,135	1,135
1968	6,757	7,892
1969 Printed Estimates	5,642	13,534
1969 Revised Estimates (incl.1968 c/f)	5,744	-
1969 Estimated Carry-forward	-	-

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

To expand and improve the facilities for the existing one year Technical Assistants' Training Course to turn out 30 Technical Assistants per annum until all the Departmental Establishment has been given one year's training. Then to develop a two year training course turning out 10-15 Technical Assistants per annum depending on the prevailing rate of wastage.

At the same time to run specialised courses for Senior Veterinary Assistants (H.T.A.) as required and in-service courses in specialised subjects: poultry, dairying, marketing, disease control.

The School with its library will provide the intellectual centre of the Department and the venue for staff conferences.

Expected Completion Date:

It is hoped to transfer this project to Revenue Account in 1972/73.

3. BACKGROUND INFORMATION

The technical assistant cadre is chronically under established and large numbers, who were recruited when educational standards were lower, are in need of further training.

While overseas courses and the Bunda College provide academic training, in the process of localisation and specialisation there is a vast field of essentially practical instruction that can only be applied in the local context. Also there are numbers of persons, both staff and local farmers, who can only benefit from courses aimed at their particular level and designed for their particular circumstances.

4. PROPOSED WORK 1970/72

In 1970/71 it is proposed to build a new senior staff quarters for the Technical Officer required when the two year course starts. The roof of the present hostel (old estate house) will be replaced and a well fitted post-mortem room will be built.

The 1971/72 expenditure will be for replacement of the school bus, teaching equipment such as the Cinema projector and rehabilitation of the old estate house.

5. JUSTIFICATION FOR PROPOSED WORK

No technical department can run effectively without trained staff. Planned livestock development will be impossible without training. This project, modest though it is, holds the key to the future progress of the Livestock Industry in Malawi.

6. EXECUTION AND SUPERVISION

The Deputy Director of Veterinary Services, through the Veterinary Education Officer.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : VETERINARY STAFF TRAINING

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 3

BRITISH AIDED PROJECT NO. : 36E

1. PROJECT OFFICER : The Director of Animal Health and Industry

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings						
Senior Staff House (W)	(1)	-	5,000	-	-	5,000
Post-mortem Room (M)	(2)	-	4,100	-	-	4,100
Repairs(Estate House(M)	(3)	-	-	500	-	500
		-	9,100	500	-	9,600
3 Water Supplies						
Extra Water Reticulations (W)	(4)	-	3,000	-	-	3,000
6 Plant & Vehicles						
New Bus		-	-	2,500	-	2,500
7 Other Equipment	(5)					
Microscopes		-	160	-	-	160
Films		-	340	250	-	590
Books		-	30	100	-	130
New Projector		-	-	200	-	200
		-	530	550	-	1,080
8 Personal Emoluments						
Lecturers (T.O.s)		280	957	2,673	-	3,630
9 Running Expenses						
M. & R.E.		250	1,000	1,000	Revenue Account	2,000
Food for Students		59	350	450	-	800
Teaching Equipment		-	50	75	-	125
		309	1,400	1,525	-	2,925
TOTAL		589	14,987	7,748	-	22,735

(M) = Costed for construction by the Veterinary Department.

(W) = Costed for construction by the Ministry of Works and Supplies.

(b) Notes on Expenditure.

(1) Senior Staff House: This is required at the Mikolongwe Veterinary Station to accommodate the Technical Officer who is going to assist with the running of a full two-year course.

(2) Post-mortem Room: At present animals which die are examined in the fields or in the small Field Butchery, which is unsatisfactory. A Post-mortem Room properly equipped for demonstration and collection of specimens is essential.

(3) Repairs (Estate House): The old Estate House was inspected by the Ministry of Works who advised the Veterinary Department that the cost of repairs would be far more economical and would provide far more student accommodation than using the same amount of money on one-storey blocks.

(4) Extra Water Reticulations: These will be required for the Hostel, the new staff House and Post-mortem Room, as well as the model demonstration Farm.

(5) Other Equipment: The School has insufficient microscopes and more are required, particularly with the Second year training course beginning. The films and books are required to keep the school up-to-date with reference to Teaching Aids and Text Books as new editions are published.

(c) Import Content

See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Region

All expenditure will be in the Southern Region.

3. LOCATION OF CONSTRUCTION

All construction will take place at Mikolongwe Veterinary Station.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE	:	POULTRY IMPROVEMENT
RESPONSIBLE MINISTRY/DEPARTMENT	:	AGRICULTURE/VETERINARY SERVICES
MALAWI DEVELOPMENT ESTIMATES, 1969	:	HEAD 81 ITEM 4
BRITISH AIDED PROJECT NO.	:	36C
RELATED PROJECT	:	W.F.P. Subsidised Poultry Stockfeed Project (1969)

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings *	-	13,900	3,050	4,200	21,150
6 Plant and Vehicles	-	2,250	250	250	2,750
7 Other Equipment	-	4,300	200	200	4,700
8 Personal Emoluments	-	1,560	2,700	3,240	7,500
9 Running Expenses	-	450	450	500	1,400
TOTAL	-	22,460	6,650	8,390	37,500
*21 Houses	-	9,900	950	3,000	13,850
22 Other Buildings	-	4,000	2,100	1,200	7,300

(b) Non-British, Non-Malawi Expenditure

Battery Cages at MK.3,000 in 1970/71.

(c) Previous Expenditure

	£	Cumulative Total
1966	9,188	9,188
1967	5,576	14,764
1968 Actual Expenditure	13,347	28,111
1969 Printed Estimates	6,440	34,551
1969 Revised Estimates	6,440	-
1969 Estimated Carry-forward	-	-

2. PROJECT TARGET

To rear and distribute 100,000 six week old birds in 1970 and 120,000 in 1971 and 1972. Training of African farmers to continue.

To produce commercial eggs in sufficient quantity to reduce imports from outside Malawi and to produce quality table birds to stabilise prices and reduce imports.

To set up a commercial Pig Unit to utilise poultry food wastes, broken eggs etc. which would otherwise be disposed of as waste.

Expected Completion Date: The project will continue until it is fully self-financing.

3. BACKGROUND INFORMATION

Malawi is deficient in adequate supplies of animal protein. There is an urgent need to encourage a rapid expansion in the production of poultry, poultry meat and eggs on a scale sufficiently large throughout the country to have a significant impact upon the basic diet of the increasing population.

Poultry presents the quickest and most efficient method by which supplies of animal protein can be increased at Village level and hence is an essential element of the Government programme of improving standards of nutrition and health.

It is Government policy to increase the production of improved strains of poultry, poultry meat and eggs at Mikolongwe Poultry Centre for distribution throughout Malawi and train African farmers to rear day old specialised commercial birds for which there is a growing demand. The aim is to distribute 120,000 six week old birds per annum, produce sufficient poultry meat and eggs to reduce imports and teach farmers modern chick brooding techniques.

It is proposed to extend the existing Pig Unit to a 30 Sow Unit to absorb waste products from the Poultry Project.

There is a T.O. at Lilongwe and a T.A. at Mzuzu whose duties are to assist distribution and carry out general extension work connected with poultry.

4. PROPOSED WORK 1970/73

To facilitate the expansion envisaged it is planned to follow this programme:

1970/71 Build a modern table bird rearing house capable of producing 200-500 quality table birds weekly. Construct a modern slaughter house for the processing of table birds, including all necessary equipment. Construct battery houses for an additional 3,000 laying birds and purchase 3,000 battery cages with all necessary equipment. (All the above are to be constructed at Mikolongwe, together with DH house for Poultry Extension Officer and one EH house for Technical Assistant. A CH house for the Poultry Industry Officer and another technical assistant's house are to be built at Lilongwe). Purchase one lorry with special body for transporting poultry and poultry produce. Purchase one motor cycle for extension duty.

1971/72 Construct 30 sow pig unit. Construct one technical assistant's house in Northern Region. Construct 1 additional rearing house to accommodate increasing production. Purchase 1 motor cycle for extension duty.

1972/73 Construct 4 Deep Litter Cattle/Poultry Houses. Extension to existing foodstore, general store, and office accommodation. Purchase 1 motor cycle. Build 1 DH house for techincal officer.

5. JUSTIFICATION FOR PROPOSED WORK

The demand for 6 week old Australorps is increasing.

Specialised commercial laying stock are essential for improved farmers. There is no commercial supply of such specialised birds at present in Malawi.

In order to meet the increasing consumer demand for poultry meat and eggs, these items are at present imported, (value of imports in 1967 - Mf.21,189 and in 6 months of 1969 - Mf.10,386).

The construction in 1970 of the battery egg unit and the table bird production plant will eliminate the necessity for imports.

The houses are required to accommodate additional specialist and technical staff to be recruited.

Motor cycles will be required to enable Extension Technical Assistants to perform their duties efficiently.

The Technical Assistants' houses are required to house extension staff specialising in poultry management.

Waste poultry products such as poultry eggs and spoiled feed can be utilised economically as pig feed to produce top quality bacon and pork The expanded poultry unit will be able to maintain a 30 sow pig unit and fill the short fall in imported pork and pork products now being imported into Malawi.

The pig unit is a continuation project and was included in earlier project submissions.

The extension to Deep Litter House, Food Store, Office accommodation, staff quarters and rearing houses are necessary to handle increased throughput of stock, extend services to all regions and house additional staff required.

6. EXECUTION AND SUPERVISION

The Poultry Centre has a Senior Officer on Revenue Account to take charge of the activities.

It is proposed however to create a new post at the superscale level to coordinate activities throughout the country and ensure that:

i) Full benefit is obtained.

ii) Overproduction in the commercial sphere is avoided.

iii) Livelihood of existing poultry farmers not jeopardised by Government competition.

The scheme will be under the supervision of the Director of Animal Health and Industry through the Senior Animal Husbandry Officer, who will delegate the responsibilities to the Chief Poultry Officer and later the Poultry Industry Officer.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : POULTRY IMPROVEMENT

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 81 ITEM 4

BRITISH AIDED PROJECT NO. : 36C

1. PROJECT OFFICER : The Director of Animal Health & Industry

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings						
1 CH.11 Houses (W)	(1)	-	5,580	-	-	5,580
1 DH. House (W)	(2)	-	3,000	-	3,000	6,000
2 EH Houses (W)	(3)	-	1,320	950	-	2,270
5 Battery Houses (M)	(4)	-	2,000	-	-	2,000
Table Bird Unit and slaughter house (M)	(5)	-	2,000	-	-	2,000
Pig Unit (M)	(6)	-	-	1,100	-	1,100
Combined Cattle/ Poultry Stalls (M)		-	-	1,000	1,200	2,200
		-	13,900	3,050	4,200	21,150
6 Plant and Vehicles						
5 Ton Lorry	(7)	-	2,000	-	-	2,000
1 Motor Cycle per annum		-	250	250	250	750
		-	2,250	250	250	2,750
7 Other Equipment						
Battery Cages	(8)	-	3,000	-	-	3,000
Slaughter Equipment	(9)	-	900	-	-	900
Miscellaneous Equipment	(10)	-	400	200	200	800
		-	4,300	200	200	4,700
8 Personal Emoluments						
Poultry Industry Officer (S9)	(11)	-	800	1,910	1,910	4,620
Poultry Extension Officers (T.O.I)	(12)	-	400	430	830	1,660
Labour		-	360	360	500	1,200
		-	1,560	2,700	3,240	7,500
9 Running Expenses						
Transport & Travelling		-	250	250	250	750
M. and R.E.		-	200	200	250	650
		-	450	450	500	1,400
TOTAL		-	22,460	6,650	8,390	37,500

Revenue	Actual				Estimated		
	1966	1967	1968	1969	1970/71	1971/72	1972/73
Sale of Eggs	5901	6363	7501	6000	7000	12000	12000
Table Birds	595	1024	1759	1500	2000	5000	5000
Growers and Day Olds	14132	14353	18472	14500	14500	14500	14500
Pullets Imported	-	-	-	500	8500	8500	8500
Pigs/Cattle	-	-	171	500	500	1000	1500
	20628	21740	27903	23000	32500	41000	41500

(W) = As costed for construction by Ministry of Works and Supplies.

(M) = As costed for construction by the Veterinary Department.

(b) Notes on Expenditure

(1) CH.11 house for Poultry Industry Officer at Lilongwe.

(2) DH House for Poultry Extension Officer at Mikolongwe in 1970/71

(3) 2 EH houses for Technical Assistants in 1970/71 (Mikolongwe & Lilongwe) and one in 1971/72 (Mzuzu)

(4) 5 Battery houses 120' x 14' at Mk.400 each.

(5) Table Bird Unit - 500 sq.ft. floor area.

Slaughter House - 20' x 20'

(6) A pig unit of 30 styes - 12' x 8' concrete lined and insulated.

(7) Lorry with specially designed body for transporting poultry.

(8) Battery Cages - Mk.3,000 being cost ex-South Africa - ex-U.K. price would be Mk.4,500 - Mk.5,000.

(9) Slaughter Equipment - includes scalder, plucker, chiller, band saw, killing racks, etc.

(10) Miscellaneous Equipment - includes water and food troughs, water founts for pigs and cattle and sundry equipment such as wheel barrows, etc.

(11) New senior post proposed of Poultry Industry Officer to be stationed at the Department Headquarters and responsible for :-

(a) the formulation and implementation of Government Poultry Policy in conjunction with livestock on a National basis,

(b) coordination of poultry development in all three regions,

(c) organising and developing a marketing system for Poultry and Poultry Products,

(d) establishing poultry experimental work,

(e) all extension (Poultry) staff through Regional Officers and Programming Poultry Extension Services including training for all departments involved.

(12) Two Poultry Extension Officers will be required on in 1970/71 for the Southern Region and one in 1972/73 for the Central Region.

(c) Import Content

See separate schedule for the Ministry of Agriculture.

(d) Breakdown of Expenditure by Region

All expenditure will be in Southern Region, except the CH 11 house and one T.A. house in the Central Region.

3. LOCATION OF CONSTRUCTION

1 CH 11 House	-	Lilongwe	1970/71
1 DH House	-	Mikolongwe	1970/71
2 EH Houses	-	1 at Mikolongwe 1 at Lilongwe	1970/71

All remaining construction will be carried out at the Mikolongwe Poultry Centre.

(c) Sale of Eggs

Table Birds

Culling and Dry Plucking

Pullets Imported

Fixed/Incubator Capacity

(d) Establishing Poultry Co-operatives

(e) All extension (Poultry) staff [illegible] Programming Poultry Extension [illegible] all departments involved.

(12) Two Poultry Extension Officers will be [illegible] the Southern Region and one in [illegible] for the Northern Region.

(c) Project Content

Two separate Schedule for the Ministry of Agriculture.

(d) Breakdown of Expenditure by Region

All expenditure will be in Southern Region, except the [illegible] one V.I. house in the Central Region.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITIE	:	LIVESTOCK EXPANSION (FORMERLY ARTIFICIAL INSEMINATION)
RESPONSIBLE MINISTRY/DEPARTMENT	:	AGRICULTURE/VETERINARY SERVICES
MALAWI DEVELOPMENT ESTIMATES, 1969	:	HEAD 81 ITEM 5
BRITISH AIDED PROJECT NO.	:	36D
RELATED PROJECTS	:	Lisease Control Rural Dairies Livestock Marketing Veterinary Laboratory

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings*	-	18,340	1,200	-	19,540
3 Water Supplies	-	800	2,000	-	2,800
5 Other Construction	200	1,250	720	-	1,970
6 Plant and Vehicles	-	2,380	3,300	1,500	7,180
7 Other Equipment	-	3,070	2,100	500	5,670
8 Personal Emoluments	1,000	3,580	3,500	3,600	10,680
9 Running Expenses	1,610	6,800	8,270	9,800	24,870
TOTAL	2,810	36,220	21,090	15,400	72,710
*21 Houses		12,290	-	-	12,290
22 Other Buildings		6,050	1,200	-	7,250

(b) Non-British, Non-Malawi Expenditure

	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
Semen	400	1,400	1,500	1,500	4,400

(c) Previous Expenditure

	£	Cumulative Total
To 31/12/67	3,793	3,793
1968 Actual Expenditure	9,006	12,799
1969 Printed Estimates	13,093	-
1969 Revised Estimates (incl.1968 c/f)	11,505	-
1969 Estimated Carry forward	1,588	-
Of which Jan/Mar. 1970	1,588	-

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

To get improved cattle born of indigenous mothers: as many as possible and as soon as possible, by:-

(a) establishing dip tank areas where all scrub bulls are castrated and a Veterinary Assistant provides an A.I. service at the dip tank on dipping days and on demand.

(b) establishing an A.I. service for individual farmers, Government herds, college farms and estates.

(c) developing existing veterinary stations and holding grounds for the multiplication of improved stock and to sell bulls and in-calf females to all farmers demanding them if their standards of disease control are such as to ensure survival;

(d) acquiring more land for the further multiplication of better animals;

(e) developing a bull centre if required for production of semen from our own bulls.

Expected Completion Date:

To be absorbed into Revenue Account after 1973.

3. BACKGROUND INFORMATION

Three breeds are being introduced: Friesian, Sussex and Brahman. All have already proved themselves under good management in Malawi and Malawians should own this type of animal and reap the greater economic returns as a result. Some Malawian farmers are in fact already doing so.

The dip tank inseminator will start work in selected areas where disease control is adequate and where a market exists for the type of animal to be introduced. Tuchila Spray Race near Blantyre is already geared to the production of cross bred Friesians as it is in an area where milk is produced for the City of Blantyre. In the Lakeshore and Lower Shire areas the Brahman will be the breed of choice for its great tropical adaptation.

The Sussex has proved itself one of the best types for finishing so far tried out experimentally for the African staff feeder scheme, but in village breeding areas it has not so far stood up very well to management stresses. This problem will probably be overcome as the provision of improved stock is the first step to improved management. This was amply demonstrated in Kenya.

To start with, however, Brahman will be used more than Sussex in the highland areas of Malawi and the switch to Sussex will follow as management and disease control measures improve.

The general lines on which progress will be made are as follows:-

(i) Select dip tank areas and the breed of bull to be used.

(ii) Put in inseminators for one or two seasons to build up numbers of improved progeny.

(iii) Follow by removal of inseminators to fresh areas and supply continued pedigree breeding by sale of bulls of the required breed or by transfer to the itinerant A.I. service.

4. PROPOSED WORK 1970/73

Old estates already acquired, one in each region, will be fenced and provided with disease control facilities and stocked with the maximum number of cows they can hold. These cattle will be both village cattle held temporarily and Government owned cattle. They will be run with bulls of the desired breeds if available or served by A.I. Village cattle will be returned in-calf and surplus Government owned females will be sold in-calf as they become available and replaced by fresh purchases. Each centre will grade up the desired breed to the point when bulls can be sold as pure-breds. The production of pure bred stock from existing centres run by the Veterinary Department will continue - the aim is for every Malawi farmer to own cattle of a recognised breed chosen according to the needs of the market and the ecological conditions of his farm.

The Senior Animal Husbandry Officer will be stationed at the Department Headquarters and will be responsible for :-

(a) The formulation and implementation of Government Policy for cattle, pigs, sheep and goats, in conjunction with dairying and poultry on a national basis.

(b) Co-ordination of livestock development in all three Regions.

(c) Co-ordination of livestock expansion centres, development and management in all three Regions.

(d) Formulating livestock management and production investigational work programmes.

(e) Organising and developing the marketing system for the livestock, hides and skins industry.

(f) Programming animal industry extension services, including training for all departments.

5. JUSTIFICATION FOR PROPOSED WORK

This project aims at improving the quality of individual beasts and so complementing efforts in other projects to increase the numbers of the national herd.

6. EXECUTION AND SUPERVISION

The Director of Animal Health and Industry through the Senior Animal Husbandry Officer, who will delegate responsibilities to the Regional Veterinary Officers or Livestock Officers, as appropriate.

4. PROPOSED WORK 1972/73

Old estates already [illegible]
provided with disease control [illegible]
number of cows they can hold.
held temporarily and Government [illegible]
bulls of the desired breeds [illegible]
will be returned in-calf and [illegible]
sold in-calf as they become available [illegible]
Such centres will grade up the desired breeds
be sold as pure-breds. The production of pure
centres run by the Veterinary Department will enable
every Malawi farmer to own cattle of a recognised
to the needs of the market and the ecological

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LIVESTOCK EXPANSION (FORMERLY ARTIFICIAL INSEMINATION)

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 5

BRITISH AIDED PROJECT NO. : 36D

1. PROJECT OFFICER

The Director of Animal Health and Industry through the Senior Animal Husbandry Officer.

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings						
House CH 4 (W)	(1)	-	6,800	-	-	6,800
CH 10 (W)	(2)	-	5,490	-	-	5,490
Farm Buildings (M)	(3)	-	5,050	1,200	-	6,250
Office (M)		-	1,000	-	-	1,000
		-	18,340	1,200	-	19,540
3 Water Supplies						
Boreholes		-	800	800	-	1,600
Pumps, engines & reticulation	(4)	-	-	1,200	-	1,200
		-	800	2,000	-	2,800
5 Other Construction						
Fencing	(5)	200	1,250	720	-	1,970
6 Plant and Vehicles						
Landrover	(6)	-	1,100	-	-	1,100
Tractor	(7)	-	1,280	-	-	1,280
Cattle Truck		-	-	3,000	-	3,000
Trailer		-	-	300	-	300
3 Motor Bikes	(8)	-	-	-	1,500	1,500
		-	2,380	3,300	1,500	7,180
7 Other Equipment						
Cold Storage Equipment	(9)	-	2,000	-	300	2,300
Farm Machinery	(10)	-	1,070	2,100	200	3,370
		-	3,070	2,100	500	5,670
8 Personal Emoluments						
Senior Animal Husbandry Officer (S.8)			2,000	2,000	2,000	6,000
Technical Officer (A.I.)		1,000	750	960	1,010	2,720
Labour			830	540	590	1,960
		1,000	3,580	3,500	3,600	10,680

(a) Details of Exp. - Cont'd	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
9 Running Expenses						
Maintenance of Vehicles & Transport & Travelling	(11)	510	2,500	3,270	4,000	9,770
Tools and Materials	(12)	500	1,400	2,000	2,800	6,200
Semen		400	1,400	1,500	2,000	4,900
Liquid Nitrogen		100	500	500	500	1,500
Air Freight		100	500	500	500	1,500
Training (A.I. Staff)	(13)	-	500	500	-	1,000
		1,610	6,800	8,270	9,800	24,870
TOTAL		2,810	36,220	21,090	15,400	72,710

(W) = As costed for construction by the Ministry of Works and Supplies.

(M) = As costed for construction by the Ministry of Agriculture.

Revenue

A.I. Service to Farms	50	280	300	400	980
Sale of Stock	500	1,500	4,000	6,000	11,500
	550	1,780	4,300	6,400	12,480

(b) Notes on Expenditure

Buildings

(1) CH 4 house for Chief Livestock Industry Officer in 1970 in Lilongwe.

(2) CH 10 house for Technical Officer (A.I.) probably in Lilongwe.

(3) In 1970: Bull pens and barns = £1,500
Stores and Coldroom = £1,550
Offices = £1,000
Milking Shed and Dairy for Likasi Livestock Centre = £2,000

In 1971: Implement Shed and Labour lines = £1,200

Water Supplies

(4) Installation of water reticulation system at Likasi and Mzuzu.

Other Construction

(5) Construction of 15 miles of fencing at Livestock Expansion Centres.

Plant and Vehicles

(6) For semen distribution.

(7) For transportation of breeding stock.

(8) For Technical Assistants (A.I.)

Other Equipment

(9) Ten "Biostat" Liquid Nitrogen containers @ £200 each
One larger "Biostat" at £300.

(10) Farm Machinery	1970/71	1971/72
Forage Harvester	£M 320	-
Hay Rake	150	-
Buck Rake	-	150
Fertiliser distributor	150	150
Stock Feed Mill	-	500
Mower	250	-
Roller	200	-
Bailer	-	1,300
TOTAL	1,070	2,100

Running Expenses

(11) M. & R.E. of M.V. - Landrover @ £500, Transporter @ £600, 2 tractors @ £300.
T. & T. S.A.H.O. £500, T.O. £400 and Maintenance of machinery and equipment and farm implements.

(12) Tools and consumable materials for bull centre and livestock expansion centres, i.e. tools, wire, stockfeed, minerals, fertilisers, etc.

(13) Staff must be sent to countries outside Malawi for training.

(c) Import Content
See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Regions

	Jan-Mar 1971			1970/71				1971/72				1972/73			
Category	S	C	N	S	C	N	HQ	S	C	N	HQ	S	C	N	HQ
2 Buildings	-	-	-	9540	8800	-	-	1200	-	-	-	-	-	-	-
3 Water Supplies	-	-	-	-	-	800	-	-	2000	-	-	-	-	-	-
5 Other Construction	200	-	-	450	400	400	-	200	200	320	-	-	-	-	-
6 Plant and Vehicles	-	-	-	2380	-	-	-	3300	-	-	-	500	500	500	-
7 Other Equipment	-	-	-	3070	-	-	-	2100	-	-	-	100	300	100	-
8 Personal Emoluments	400	400	200	1590	1180	810	-	1332	1168	1000	-	1250	1250	1100	-
9 Running Expenses	645	645	320	700	700	700	4700	800	800	800	5870	2500	2500	2500	2300
TOTAL	1245	1045	520	17730	11080	2710	4700	8932	4168	2120	5870	4350	4550	4200	2300

3. LOCATION OF CONSTRUCTION

One CH 4 at Lilongwe (C.R.) (W)

One CH 10 (probably) at Lilongwe (C.R.) (W)

Artificial Insemination Bull Station (probably) in Lilongwe H.Q. (C.R.) (M)

REPUBLIC OF MALAWI

DEPARTMENT OF VETERINARY SERVICES

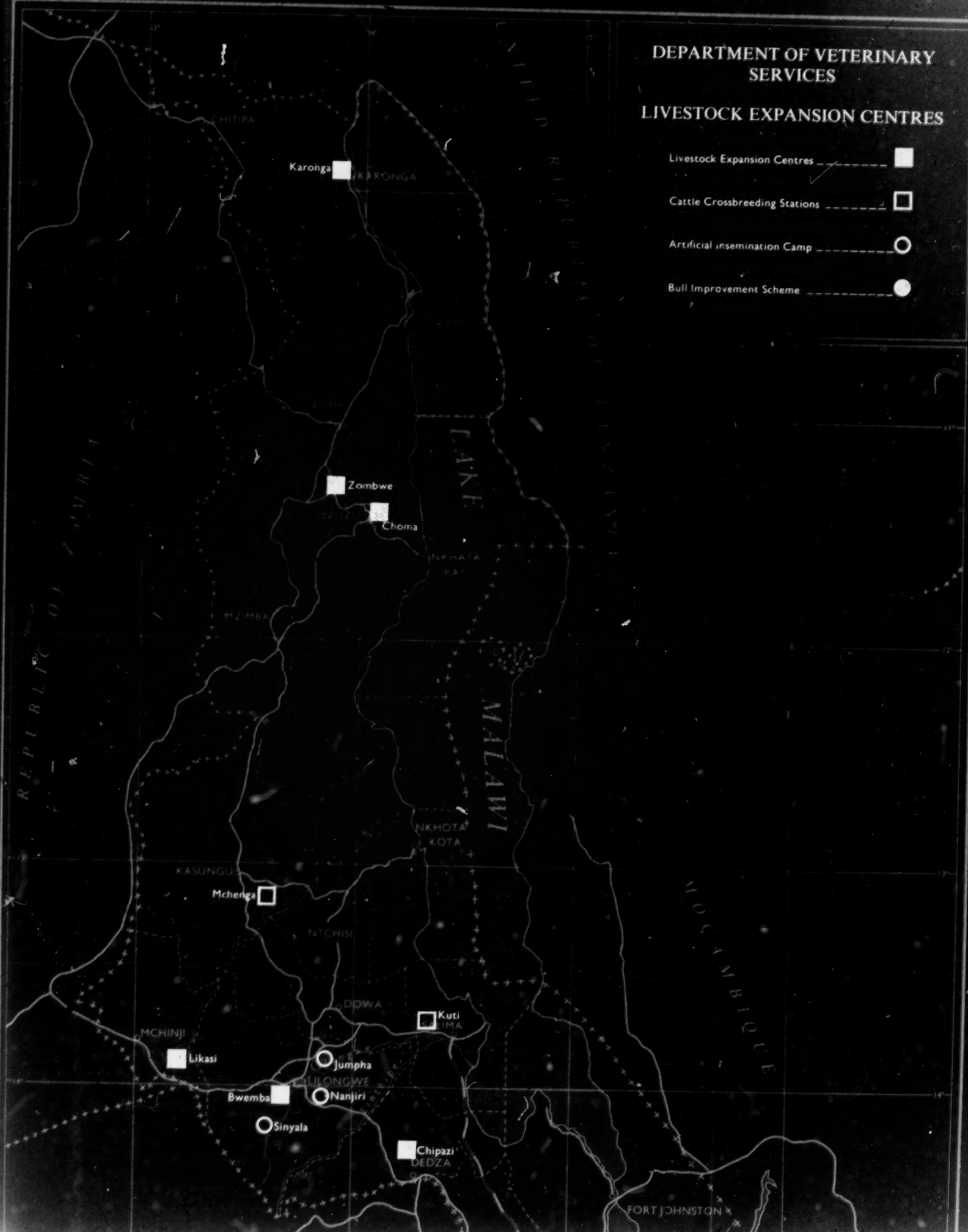
LIVESTOCK EXPANSION CENTRES

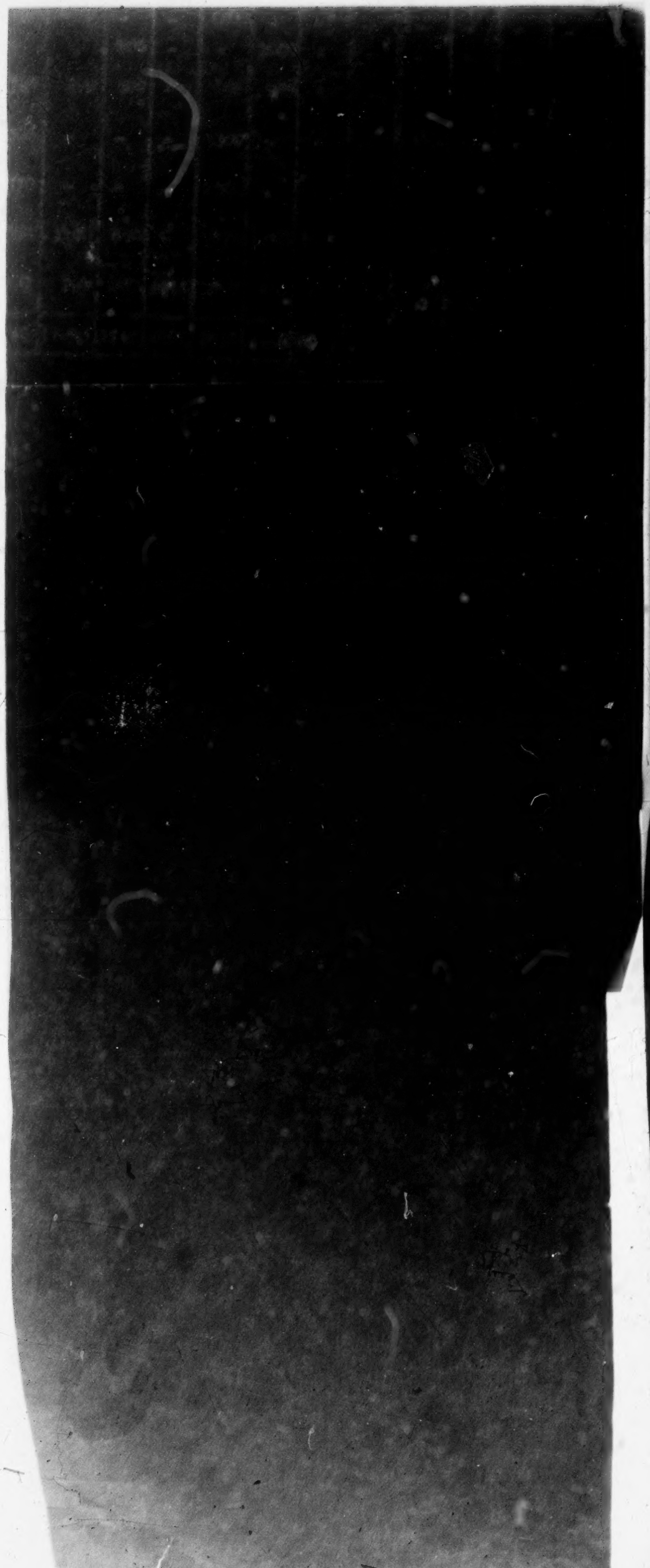
Livestock Expansion Centres

Cattle Crossbreeding Stations

Artificial Insemination Camp

Bull Improvement Scheme




REPUBLIC
Boundaries – International
District
Railways
Principal Roads
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MALAWI

NKHOTA KOTA

MOCAMBIQUE

Mchenga

Kuti

Likasi

Jumpha

Bwemba

Nanjiri

Sinyala

Chipazi

Symon Bull Improvement Scheme

Mingoli

Chikunda

Mikolongwe and Busa

Mpemba

Tuchila Agric.

NSANJE

Drawn and Printed by the Department of Surveys, Malawi. February 1970

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : DAIRY DEVELOPMENT (FORMERLY RURAL DAIRIES)

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 6

BRITISH AIDED PROJECT NO. : 36F

RELATED PROJECTS : U.N.D.P./U.N.I.C.E.F. Dairy and Livestock Project

Livestock Expansion (Artificial Insemination)

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings *	-	550	11,381	3,951	15,882
3 Water Supplies	-	1,150	1,150	-	2,300
6 Plant and Vehicles	-	600	600	-	1,200
7 Other Equipment	500	4,077	4,077	-	8,154
8 Personal Emoluments	1,000	2,440	4,240	5,350	12,030
9 Running Expenses	350	1,000	1,000	2,000	4,000
TOTAL	1,850	9,817	22,448	11,301	43,566
*21 Houses	-	-	9,531	3,951	13,482
22 Other Buildings	-	550	1,850	-	2,400

(b) Non-British, Non-Malawi Expenditure

2 Thimonier Milk Packing Plants £2,400.

(c) Previous Expenditure

	£	Cumulative Total
To 31/12/67	3,407	3,407
1968 Actual Expenditure	4,657	8,064
1969 Printed Estimates	9,033	-
1969 Revised Estimates (incl.1968 c/f)	9,633	-
1969 Estimated Carry-forward (to Jan-Mar 1970)	-	-

(d) Source of Finance

U.K. Development Loan

2. PROJECT TARGET

To have eight rural dairy demonstration and collecting units in operation by the end of 1972.

To have pasteurised milk available at a reasonable price in all the main population centres of Malawi.

To have Malawian dairy farmers selling milk to the pasteurisation plants from Friesian cows in all three regions.

The U.N.D.P./U.N.I.C.E.F. Dairy and Livestock project is complementary to this project.

Expected Completion Date: The project will continue until it can be established on a commercial basis.

3. BACKGROUND INFORMATION

The dairy industry in Malawi is undergoing development, control and rationalisation. This is taking place in two phases:

(a) demonstration of small scale rural dairying, and the development of African dairy farmers;

(b) introduction of their milk production into the main producer - retailer supply system.

Advice is being taken from the dairy experts provided under the UNDP Livestock "Mini-Project" so that suitable control legislation for Malawi can be prepared. Studies to be carried out under the Mini-Project will clarify the future pattern of development and the means of achieving it.

A UNICEF team visited Malawi in January, 1967 to advise on the second phase of the scheme. The team submitted a favourable report and prepared a plan of operations for the cooperation of UNICEF, FAO and Malawi Government in the development of the dairy industry. This plan which was signed in June 1969 depends for its implementation on the build up of African milk producers under the Rural Dairy Project.

Demonstration dairies have been established at Mponela in the Central Region, and Mzuzu in the Northern Region, and at Chileka in the Southern Region. Milk is already being collected at Mponela and Chileka for resale in these areas.

4. PROPOSED WORK 1970/73

In 1970/71 it is proposed to equip a fourth demonstration centre developed near Chiradzulu during 1969. A fifth demonstration centre is to be built in 1970/71 and equipped in 1971/72, and a sixth in 1971/72 to be equipped in 1972/73. Two more complete centres will be built and equipped in 1972/73 one in Southern and one in Central Region.

Small dairy plants capable of collecting, testing, pasteurising, cooling and packing milk produced from the rural dairies will be set up in Lilongwe and Mzuzu and another dairy plant at the new railway complex at Liwonde or possibly to serve the Salima or Monkey Bay Lakeshore holiday areas. The Lilongwe plant will be replaced by a full scale dairy plant as soon as supply and demand justify. The plant's equipment will then be moved to one of the new centres mentioned above.

5. JUSTIFICATION FOR PROPOSED WORK

The initial capital value of a rural dairy demonstration centre is approximately £2,800 comprising buildings at £1,000 and equipment and cattle at £1,800. Assuming it produced 50 pints of milk a day and also collected and distributed 20 gallons a day from the producers, it is estimated that a net annual profit would be achieved of approximately £443, which represents 16% of initial capital.

Expenditure	-	Cost of 20 gallons of milk @ 4/-	£4. 0. 0d
		Hired labourers @ 10/- a day	10. 0d
		Fuel, Cooling Transport, Water etc.	1.10. 0d
			£6. 0. 0d
Income	-	Sale of 160 pints at 10d	£6.13. 4d
		Net Profit of 13/4 a day	£243 p.a.
		Plus profit on milk	200 "
		Total	£443 p.a.

In addition to profits earned by the rural dairy demonstration centres, over all economic benefits will depend on the extent to which African smallholders are encouraged to enter dairy production in the manner demonstrated.

Considerable savings on foreign exchange will eventually result from the reduction or elimination of imports of milk and dairy products which in 1968 totalled £430,530.

The development of a pilot dairy at Blantyre with U.N. help makes it imperative to develop a further dairy demonstration and collection centre in Southern Region. The growth of population in the New Capital Lilongwe will provide a market for further developments in Central Region in 1972.

It might ultimately be possible to use seasonal surpluses of milk to produce butter or cheese.

6. EXECUTION AND SUPERVISION

The project will be executed by the Director of Animal Health and Industry and the Senior Animal Husbandry Officer.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : DAIRY DEVELOPMENT (FORMERLY RURAL DAIRIES)

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 6

BRITISH AIDED PROJECT NO. : 36F

1. PROJECT OFFICER : The Director of Animal Health and Industry

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings						
CH.11 House (W)	(1)	-	-	5,580	-	5,580
DH.6 Houses (W)	(2)	-	-	3,951	3,951	7,902
Office Extension (M)		-	-	1,250	-	1,250
Rural Dairy Unit 2 (M)		-	550	600	-	1,150
		-	550	11,381	3,951	15,882
3 Water Supplies						
2 Boreholes (with pumps)	(3)	-	1,150	1,150	-	2,300
9 Plant and Vehicles						
2 x 8 cwt. vans		-	600	600	-	1,200
7 Other Equipment						
Boiler		-	435	435	-	870
Cold Room		-	372	372	-	744
Compresser		-	750	750	-	1,500
Milk Cooler		-	120	120	-	240
Pasteuriser Vat		500	1,200	1,200	-	2,400
Thimonier Milk Filler		-	1,200	1,200	-	2,400
		500	4,077	4,077	-	8,154
8 Personal Emoluments						
Dairy Industry Officer		-	-	800	1,910	2,710
Chief Dairy Officer		400	1,340	1,340	1,340	4,020
Regional Dairy Officer	(4)	450	500	1,500	1,500	3,500
Subordinate Staff	(5)	150	600	600	600	1,800
		1,000	2,440	4,240	5,350	12,030
9 Running Expenses						
Transport and Travelling	(6)	200	500	500	1,000	2,000
M. & R.E.	(7)	150	500	500	1,000	2,000
		350	1,000	1,000	2,000	4,000
TOTAL		1,850	9,817	22,448	11,301	43,566

Estimated

Revenue (Gross)	1970/71	1971/72	1972/73	Total
Sale of Milk	10,000	12,000	16,000	38,000

(M) = Costed for construction by the Veterinary Department.
(W) = Costed for construction by the Ministry of Works and Supplies.

(b) Notes on Expenditure

(1) CH.11 House for Dairy Industry Officer at Lilongwe.

(2) DH. 6 Houses for two Regional Dairy Technical Officers - Southern and Central Regions.

(3) Boreholes, pumps and tanks for Rural Dairy Units.

(4) Regional Dairy Officers are now required in each Region.

(5) Subordinate Staff composed of Technical Assistants, Drivers and Labourers.

(6) Transport and Travelling allowances for Dairy Officers.

(7) M. & R.E. will be provided at £200 a year for each vehicle.

(c) Import Content

See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Region

	Jan-Mar 1970				1970/71				1971/72				1972/73			
	S	C	N	HQ	S	C	N	HQ	S	C	N	HQ	S	C	N	HQ
2 Buildings	-	-	-	-	-	550	-	-	3951	5580	1250	600	-	-	3951	-
3 Water Supplies	-	-	-	-	-	1150	-	-	-	-	1150	-	-	-	-	
6 Plant and Vehicles	-	-	-	-	-	600	-	-	-	-	600	-	-	-	-	-
7 Other Equipment	-	-	-	500	4077	-	-	-	-	-	4077	-	-	-	-	-
8 Personal Emoluments	200	200	200	400	340	300	300	1500	500	470	470	2800	790	700	700	3160
9 Running Expenses	100	100	100	50	300	300	300	100	300	300	300	100	600	600	600	200
TOTAL	300	300	300	950	4717	2900	600	1600	4751	6350	7847	3500	1390	1300	5251	3360

3. LOCATION OF CONSTRUCTION

The siting of the new demonstration centres will depend upon experience gained.

The proposed arrangement is:-

Northern Region:	Mzuzu	- operating
	Ekwendeni	- planned 1971/72
Central Region :	Mponela	- operating
	Chipazi/Dedza	- planning this year for 1970
	Lilongwe	- planned 1970/71
Southern Region:	Chileka	- operating
	Mbulumbuzi/Chiradzulu	- under construction 1969
	Tuchila	- planned 1972/73
Housing:	CH 11	- Lilongwe
	DH 6	- Chipazi and Mbulumbuzi
Boreholes:	Probably Mponela and Ekwendeni.	

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS, U.N.D.P. & U.N.I.C.E.F. DAIRY AND LIVESTOCK PROJECT

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 61

RELATED PROJECTS : All Veterinary Projects

1. FINANCIAL SUMMARY

(a) Funds Requested

	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
8 Personal Emoluments	250	1,000	1,000	-	2,000
9 Running Expenses	1,300	3,550	2,000	-	5,550
10 Special Expenditure	-	680	-	-	680
TOTAL	1,550	5,230	3,000	-	8,230

(b) Non-British, Non-Malawi Expenditure

Not applicable.

(c) Previous Expenditure

	£	Cumulative Total
1968	6,035	6,035
1969 Printed Estimates	18,180	
1969 Revised Estimates (incl. 1968 c/f)	18,805	
1969 Estimated carry-forward (included in Jan-Mar 1970 above)	500	

(d) Source of Finance

Local Resources.

2. PROJECT TARGET

To provide the local costs for a three year U.N.D.P. Special Fund "Mini Project" entitled "Improvement of Dairy and Livestock Production". Also to provide the counterpart costs of the U.N.I.C.E.F. dairy equipment to be provided as part of the project.

The immediate objective is to set up a Pilot Milk Plant in Blantyre to facilitate hygienic processing of milk and milk products and develop a more effective dairy marketing system.

Expected Completion Date

31st March 1972.

3. BACKGROUND INFORMATION

Malawi has a relatively small livestock population compared with the human population. There are less than half a million cattle (about 1 beast to 8 people). Present production of both meat and milk is unable to meet the demand. The general economic development taking place in Malawi creates a growing consumer demand for livestock products.

In order to become self-sufficient in these products the livestock industry needs to be developed on a national scale.

The U.N.D.P. project provides for Experts and Consultants to advise the Malawi Government on the future development of the dairy and livestock industry, while both U.N.I.C.E.F. and U.N.D.P. provide support equipment.

4. PROPOSED WORK 1970/73

This project provides for the Malawi Government counterpart costs of the U.N.D.P. project, and for the counterpart costs of the U.N.I.C.E.F. dairy equipment to be purchased as part of the project for the Mikolongwe dairy training school, the Blantyre Pilot Plant and Chileka Dairy Demonstration Centre.

The U.N.D.P. project provides the following personnel who will be supported with operating costs provided under this project.

5 Resident Experts:

- Project Manager
- Dairy Technologist
- Dairy Industry Adviser
- 2 Associate Experts { 1 Livestock Improvement and Training / 1 Veterinary Science and Training. }

5 Visiting Consultants:

- 1 Animal Health Consultant
- 1 Animal Production Consultant
- 1 Economics Consultant
- 1 Marketing Consultant
- 1 Wildlife Consultant (Forestry and Game Project)

The project envisages the construction of a Milk Processing Plant in Blantyre with a capacity of 800 to 1,500 gallons of milk per day which will be operated as a pilot plant for the next 3 to 4 years. By that time it is hoped it will be replaced by a large commercial dairy factory.

A revolving fund of £1,000 will be established for the purchase of livestock for experimental work to be carried out by the U.N.D.P. Experts. In addition a £5,000 revolving fund has been established for working capital to run the Milk Plant.

5. JUSTIFICATION FOR PROPOSED WORK

The development of the livestock industry is essential if the production of meat, milk and other products is to be increased.

There is no organised dairy industry in Malawi and the production of milk is mainly in the hands of a few estate owners with only one producer supplying pasteurised milk. There is an undetermined quantity being supplied by itinerant village producers. Little or no effort is being made by the producers to expand the production or improve the quality of the product.

To ensure the supply of safe milk for the consumer it is necessary to establish an organised production and marketing system. The milk Processing Plant will form the focal point of this organisation providing a marketing as well as a modern processing centre. The plant will in the first instance be run by the Veterinary Department with the technical assistance of the U.N.D.P. Dairy Production and Development Officer until it can be taken over by a national dairy authority to be run as a commercial concern. Dairy legislation to control the standards of production and marketing as well as imports and exports will need to be introduced.

6. EXECUTION AND SUPERVISION

The project will be administered by the Director of Animal Health and Industry in those aspects concerning dairying, animal health and livestock marketing.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LOCAL COSTS, U.N.D.P. AND U.N.I.C.E.F. DAIRY AND LIVESTOCK PROJECT

RESPONSIBLE MINISTRY/DEPARTMENT : AGRICULTURE/VETERINARY SERVICES

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 81 ITEM 61

1. PROJECT OFFICER : Director of Animal Health & Industry

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan-Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
8 Personal Emoluments						
Secretarial Staff		250	1,000	1,000	-	2,000
9 Running Expenses						
Transport Charges	(1)	560	400	300	-	700
M. & R.E. of M.V.	(2)	675	2,700	1,400	-	4,100
Services and Utilities		65	450	300	-	750
		1,300	3,550	2,000	-	5,550
10 Special Expenditure						
Cash Contribution @ 3%	(3)	-	680	-	-	680
TOTAL		1,550	5,230	3,000	-	8,230

(b) Notes on Expenditure

(1) Transport Charges

Payment of transport charges for equipment supplied by U.N.D.P. for this project.

(2) Maintenance and Running Expenses

	1970/71	1971/72	1972/73
4 Light Vehicles	2,000	1,000	-
1 Transporter (including 1 Landrover and Transporter based in Blantyre)	700	400	-
	2,700	1,400	-

(3) Contribution to experts' salaries and allowances.

(c) Import Content

See separate schedule for Agriculture.

(d) Breakdown of Expenditure by Region

All expenditure will be in Southern Region except for a little travelling in Central Region.

3. LOCATION OF CONSTRUCTION

Dairy Plant in the City of Blantyre.

HEAD 82

NEW CAPITAL

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : LOAN TO C.C.D.C.: NEW CAPITAL CONSTRUCTION PHASE I.

RESPONSIBLE MINISTRY : WORKS AND SUPPLIES

MALAWI GOVERNMENT ESTIMATES 1969 : HEAD 82, ITEM 1

RELATED PROJECTS : New Capital Planning Phase I.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
10 Special Expenditure	144,539	1,500,000	2,250,910	407,741	4,158,651
TOTAL	144,539	1,500,000	2,250,910	407,741	4,158,651

(b) Non-British, Non-Malawi Expenditure: Not applicable.

(c) Previous Expenditure

		Cumulative Total
to 31/12/1968		Nil
1969 Printed Estimates	1,500,000	
1969 Revised Estimates	500,813	
1969 Estimated Carry-Forward	999,187	
of which Jan-Mar 1970	144,539	
1970/71	854,648	

(d) Source of Finance: Loan from the Government of the Republic of South Africa.

2. PROJECT TARGET

The provision of loan finance to the Capital City Development Corporation for the construction of buildings and services under the first phase of the New Capital Project.

Expected Completion Date: This phase 31st March, 1973.

3. BACKGROUND INFORMATION

The town of Lilongwe is to be developed under a phased programme as the new capital city for Malawi. During the first phase three Government Ministries will be moved to Lilongwe and the basic urban infra-structure will be created. From 1973/1976, the remaining Ministries and the National Assembly will be established in the New Capital. A statutory body, the Capital City Development Corporation, was set up in 1968, as agent of the Government, to supervise the orderly construction of the new capital city. The Ministry of Works and Supplies, as consultant to the Capital City Development Corporation, is at present undertaking the necessary civil engineering, town planning and architectural design and arrangements for construction work.

4. PROPOSED WORK 1970/73

The town planning, civil engineering and architectural design, development and construction of:-

(a) office buildings for three Ministries,
(b) housing for staff of three Ministries,
(c) residential, industrial and commercial estates to meet private sector requirements,
(d) the principal urban roads, water supplies, a sewerage scheme, electricity and tele-communications,
(e) landscaping works and a lake in the city centre,
(f) international airport.

5. JUSTIFICATION FOR PROPOSED WORK

The development of Lilongwe as the new capital city, in the geographical centre of Malawi, has been fully justified in studies undertaken by the Malawi Government and in independent reports.

6. EXECUTION AND SUPERVISION

The project is being implemented by the Capital City Development Corporation and the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LOAN TO C.C.D.C.: NEW CAPITAL CONSTRUCTION PHASE I.

RESPONSIBLE MINISTRY : WORKS AND SUPPLIES

MALAWI GOVERNMENT ESTIMATES 1962 : HEAD 82, ITEM 1

1. PROJECT OFFICER

The Secretary for Works and Supplies.

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
10 Special Expenditure	144,539	1,500,000	2,250,910	407,741	4,158,651
TOTAL	144,539	1,500,000	2,250,910	407,741	4,158,651

(b) Notes on Expenditure

1. Payments are made:-

(a) monthly by the Accountant General against advance account expenditure authorities approved by the Capital City Development Corporation for work undertaken on behalf of the Corporation by the Ministry of Works and Supplies, or other Government departments, as their contractors; and

(b) by the Treasury direct to the Capital City Development Corporation for work carried out by other contractors, or to cover the Corporation's running expenses.

2. The provision for the years 1971/72 and 1972/73 is reflected in the Capital City Development Corporation budget which also provides for expenditure of £1,874,244 for 1970/71 and accordingly supplementary provision will be required for this period.

(c) Import Content

Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
50,000	350,000	350,000	200,000	750,000

(d) Breakdown of Expenditure by Region

All in Central Region.

3. LOCATION OF CONSTRUCTION

Lilongwe.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : NEW CAPITAL PLANNING: PHASE I

RESPONSIBLE MINISTRY : WORKS AND SUPPLIES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 82 ITEM 61

RELATED PROJECTS : Loan to C.C.D.C.: New Capital Construction Phase I

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
1 Design & Supervision	37,000	45,500	11,000	-	56,500
TOTAL	37,000	45,500	11,000	-	56,500

(b) Non-British, Non-Malawi Expenditure

Not applicable

(c) Previous Expenditure

		Cumulative Total
1967	100,737	100,737
1968	102,362	203,099
1969 Printed Estimates	100,000	
1969 Revised Estimates	100,000	
1969 Estimated Carry-forward	Nil	

(d) Source of Finance

Local Resources

2. PROJECT TARGET

The provision of a Master Plan for the new capital of Malawi at Lilongwe.

Expected Completion Date: Final payment due 25th September 1971.

3. BACKGROUND INFORMATION

The provision under this project is to cover the remaining reimbursement of costs incurred by the Malawi Development Corporation arising from two contracts with Imex (Pty) Ltd., under which certain planning services were arranged, including town planning, engineering and architectural designs in respect of the proposed new capital of Malawi at Lilongwe.

4. PROPOSED WORK 1970/73

No further commitments will be financed under this project and the funds are to meet contractual obligations.

5. JUSTIFICATION OF PROPOSED WORK

It was necessary that town planning, civil engineering and architectural design work should be undertaken in connection with the new capital project.

6. EXECUTION AND SUPERVISION

Payment will be made to the Malawi Development Corporation by the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : NEW CAPITAL PLANNING: PHASE I

RESPONSIBLE MINISTRY : WORKS AND SUPPLIES

MALAWI DEVELOPMENT ESTIMATES 1969 : HEAD 82 ITEM 61

1. PROJECT OFFICER : The Secretary for Works and Supplies.

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
1 Design and Supervision	37,000	45,500	11,000	-	56,500
TOTAL	37,000	45,500	11,000	-	56,500

(Amounts are rounded to allow for changes in exchange rate.)

(b) Notes on Expenditure

Payment will be made to IMEX (Pty) Ltd through the Malawi Development Corporation. The dates and amounts due, including principal and interest, are given below.

DATE	BILL NO.	AMOUNT
5 FEBRUARY	A5	4 966 9 9
14 "	A6	12 835 17 3
28 "	B5	13 869 3 -
25 MARCH	D4	4 753 10 -
TOTAL JAN-MAR 1970		£36,425 - -
30 APRIL	C5	4 622 13 3
7 MAY	B4	6 782 15 7
5 AUGUST	A6	4 825 18 4
29 "	B6	13 476 12 8
25 SEPTEMBER	D5	4 622 13 3
30 OCTOBER	C6	4 494 3 -
7 NOVEMBER	B5	6 596 2 -
TOTAL 1970/71		£45,420 18 1

DATE	BILL NO.	AMOUNT
7 MAY	E6	6 409 8 6
25 SEPTEMBER	D6	4 494 3 1
TOTAL 1971/72		£10,903 11 7

(c) Import Content

All payments in South African currency.

(d) Breakdown of Expenditure by Region

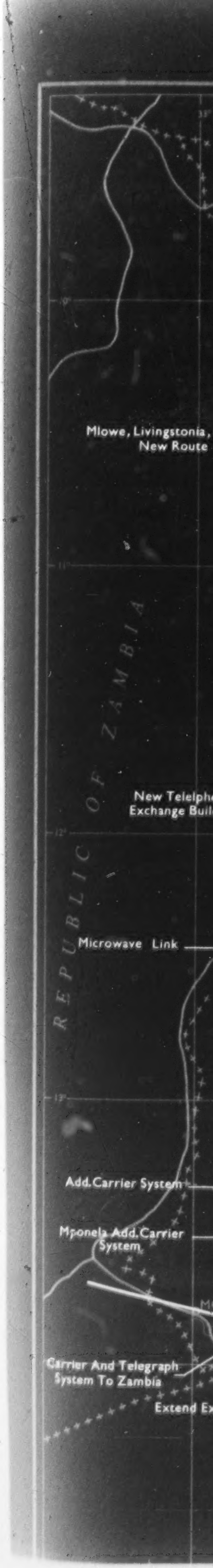
Not applicable.

3. LOCATION OF CONSTRUCTION

Not applicable.

HEAD 83

POSTS AND TELECOMMUNICATIONS


Mlowe, Livingstonia,
New Route
REPUBLIC OF ZAMBIA
New Telelphe
Exchange Buil
Microwave Link
Add. Carrier System
Mponela Add. Carrier
System
Carrier And Telegraph
System To Zambia
Extend Ex

REPUBLIC OF MALAWI

MINISTRY OF TRANSPORT
AND COMMUNICATIONS

DEPARTMENT OF
TELECOMMUNICATIONS

DEVELOPMENT PROGRAMME

UNITED REPUBLIC OF TANZANIA

CHITIPA

KARONGA

NKHOTA KOTA

KASUNGU

NTCHISI

DOWA

SALIMA

LILONGWE

MZUZU

NKHATA BAY

MZIMBA

DEDZA

FORT JOHNSTON

LAKE MALAWI

MOCAMBIQUE

hilumba

hange

HINJI

Nkhunga New Overhead Route

New Telephone Exchange

Add.Carrier System

Exchange Building

Microwave Link

Nkhunga New Overhead Route

New Telephone Exchange

Add.Carrier System

Add.Carrier System

Mponela Add.Carrier System

Carrier And Telegraph System To Zambia

Extend Exchange

Additional Channels

Liwonde New Telephone Exchange Building Add. Carrier System

Domasi Additional Pairs

Extension To Carrier Room

Namadzi Add One Pair

Maintenance Control Centre
Additional A.R.Q To
Nairobi Speaking Clock
Telex Extension
2000 Lines Extension Chichiri
Hostel For Trainees

Chileka Additional Carrier System
New Automatic Exchange

Rebuild Route
Add.Carrier System

Add.Carrier System
To Luchenza

Bvumbwe New Automatic Exchange
And Building Extension

SCALE
MILES
20 10 0 20 40 60

Boundaries —International
District
Railways
Principal Roads

REPUBLIC OF MOZAMBIQUE
MALAWI
MZIMBA
KASUNGU
NKHOTA KOTA
DOWA
SALIMA
MCHINJI
LILONGWE
DEDZA
FORT JOHNSTON
NCHEU
KASUPE
BLANTYRE
CHIKWAWA
CHOLO
MLANJE
NSANJE
(Under Construction)

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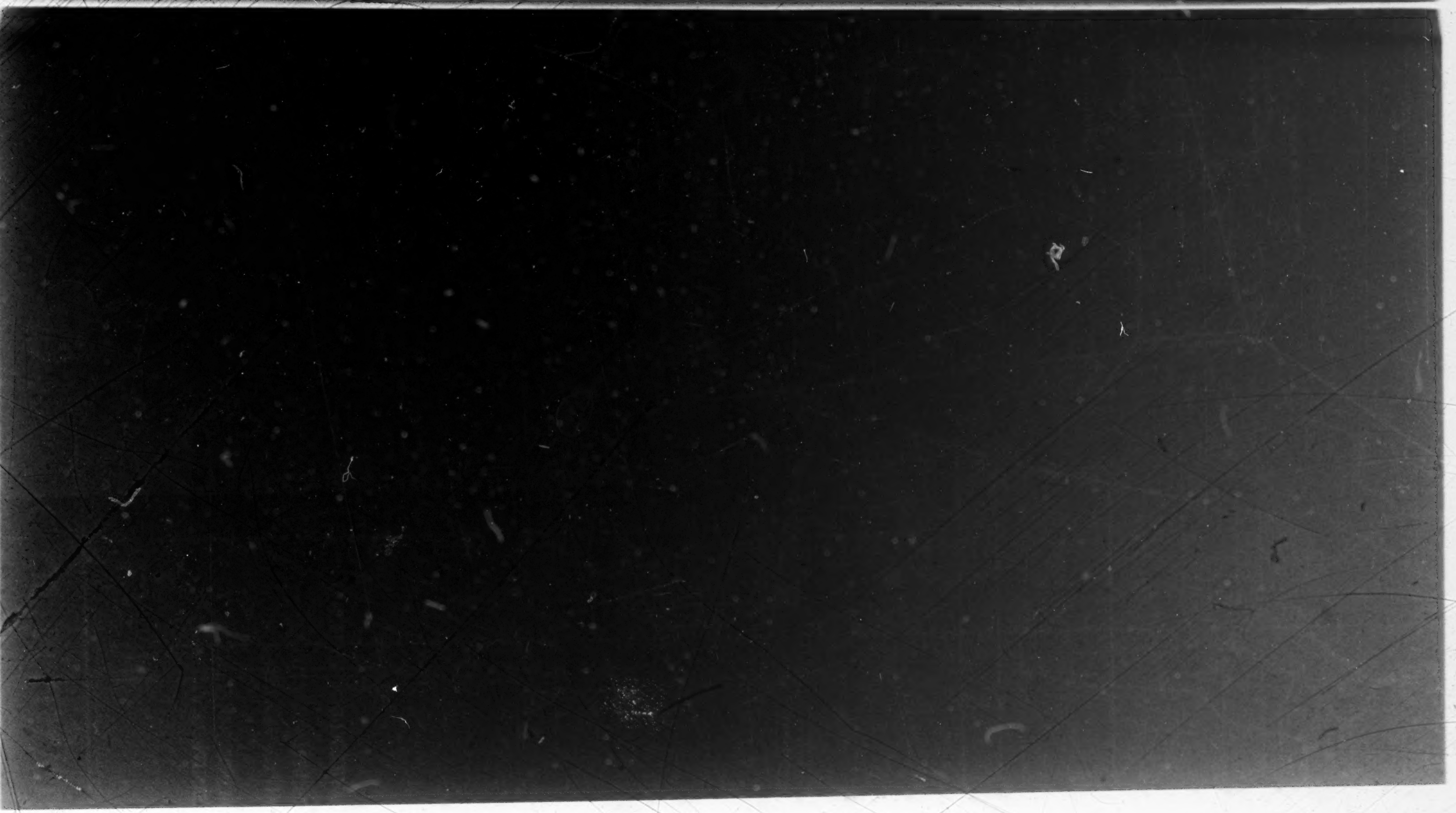

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	TRUNK CIRCUIT GROWTH SOUTHERN REGION
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 3
BRITISH AIDED PROJECT NO	39
RELATED PROJECT	Local Telephone Growth, Inter-Regional Trunk Circuit Growth

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/3	TOTAL 3 Yrs
2 Buildings	600	2000	-	-	2000
5 Other Construction	2550	9750	17750	-	27500
7 Other Equipment	19914	33791	31010	6200	71001
TOTAL	23064	45541	48760	6200	100501

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure:

		Cumulative Total
to 31/12/68	63400	63400
1969 Printed Estimates	49230	
1968 carry over not in printed Estimates	- 270	
1969 Revised Estimates	8880	
1969 Estimated carry forward	40080	
of which Jan/Mar 1970	20564	
1970/71	19516	

(d) Source of Funds:

United Kingdom Development Loan.

2. PROJECT TARGET

To meet the increasing demand for trunk telephone service in the Southern Region.

Expected Completion Date

This is a continuous project. The work authorised for the period 1st January, 1970 to 31st March, 1970 will be completed by 31st March, 1970. The remaining works authorised for the period 1st April, 1970 to 31st March, 1971 should be completed by 31st March, 1971 provided that manufacturers of equipment maintain satisfactory deliveries.

3. BACKGROUND INFORMATION

The majority of expenditure is for increasing the number of junctions on routes which are overloaded. The development of the railway/road/lake complex at Liwonde requires improved telephone facilities, there being at present only a single line.

4. PROPOSED WORK 1970/73

In 1970 and 71 the following are proposed :

Re-transposition of the existing telephone route between Blantyre and Chikwawa to make it suitable for high frequency carrier systems between Blantyre and the Lower River. Provision of a carrien system to Nsanje. Provision of a carrier system between Blantyre and Chileka. Extension of a carrier system between Cholo and Luchenza. Addition of wires to the overhead routes between Zomba and Domasi and between Zomba and Namadsi. Provision of a carrier system between Zomba and Liwonde.

The programme for 1972/3 has been planned in outline to enable equipment to be ordered but the final allocation of equipment to the various routes will depend on the rate of growth of traffic on these routes.

5. JUSTIFICATION FOR PROPOSED WORK

Additional trunk circuits are required to maintain a standard of service at least equal to the minimum acceptable in a national network.

The railway/road/lake complex at Liwonde necessitates the provision of a telephone exchange with adequate junctions to the national network.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental personnel with the exception of the Liwonde building, which is to be constructed by the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE — TRUNK CIRCUIT GROWTH SOUTHERN REGION

RESPONSIBLE MINISTRY/DEPARTMENT — TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969 — HEAD 83 ITEM 3

BRITISH AIDED PROJECT NO. — 39

1. PROJECT OFFICER — Divisional Engineer (Planning)
Post Office Headquarters
Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure:	Notes	Jan-Mar 1970	1970/71	1971/2	1972/3	TOTAL 3 Yrs
2 Buildings						
(2-2) Carrier and exchange equipment building Liwonde	(1)	-	2,000	-	-	2,000
(2-1) Mlanje building c/f	(2)	600	-	-	-	-
Sub Total		600	2,000	-	-	2,000
5 Other Construction						
(5-1) Mlanje-Thornwood c/f		-	5,000	-	-	5,000
(5-3) Blantyre-Nsanje c/f	(5)	50	1,000	-	-	1,000
(5-4) 1 pair Zomba-Namadzi	(4)	-	2,500	-	-	2,500
(5-6) 2 pairs Zomba-Domasi	(4)	2,500	-	-	-	-
(5-5) Re-transpose Blantyre Chikwawa route	(3)	-	1,250	-	-	1,250
1971/72 and 1972/73 Programmes		-	-	17,750	-	17,750
Sub Total		2,550	9,750	17,750	-	27,500

Continued page 4

7	Other Equipment					
	1968 Programme		-	3,016		3,016
(7-1)	Blantyre-Fort Johnston c/f	(6)	12,214	-	-	-
(7-2)	Fort Johnston-Monkey Bay c/f	(6)	-	3,300	-	3,300
(7-3)	Chikwawa-Chiromo c/f	(6)	-	2,900	-	2,900
(7-4)	Blantyre-Mwanza c/f	(6)	4,500	-	-	-
(7-5)	Blantyre-Chikwawa c/f	(6)	3,200	-	-	-
(7-6)	Cholo-Luchenza c/f	(6)	-	4,300	-	4,300
(7-8)	Carrier system Blantyre/Nsanje	(6)	-	4,250	-	4,250
(7-9)	Additional channels Cholo/Luchenza	(7)	-	1,200	-	1,200
(7-10)	Carrier system Blantyre/Chileka	(6)	-	6,825	-	6,825
(7-11)	Carrier system Zomba/Liwonde	(6)	-	8,000	-	8,000
	1971/2 & 1972/3 Programmes		-	-	31,010	6,200	37,210
	Sub Total		19,914	33,791	31,010	6,200	71,001
	TOTAL		23,064	45,541	48,760	6,200	100,501

(b) Notes on Expenditure:

(1) A new building is required at Liwonde, to be constructed by the Ministry of Works and Supplies.

(2) Alterations still to be carried out at Mlanje.

(3) The existing Blantyre-Chikwawa overhead route to be re-transposed to carrier standards.

(4) Additional pairs of wires will be erected on the Zomba-Domasi and Zomba-Namadzi routes.

(5) Completion of work on Blantyre-Nsanje route.

(6) Carrier systems to be installed:-

Blantyre-Nsanje
Blantyre-Chileka
Zomba-Liwonde

(7) Additional carrier channels are required on the Cholo-Luchenza system.

(c) Import Content

	Jan/Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs
Telecommunication equipment	-	19,825	30,100	5,950	55,875
Overhead Route Materials	2,000	3,000	16,250	-	21,250
TOTAL	2,000	22,825	46,350	5,950	77,125

(d) Breakdown of Expenditure by Regions

All the expenditure will be in the Southern Region.

3. LOCATION OF CONSTRUCTION

Blantyre, Chileka, Chikwawa, Zomba, Domasi, Namadzi, Liwonde during period 1.1.70 - 31.3.71.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	TRUNK CIRCUITT GROWTH CENTRAL AND NORTHERN REGIONS.
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 4
BRITISH AIDED PROJECT NO	39
RELATED PROJECTS	Local Telephone Growth, Inter-Regional Circuit Growth.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Yrs.
2 Buildings	-	2,000	-	-	2,000
5 Other Construction	1,000	13,800	5,350	42,920	62,070
7 Other Equipment	2,466 Cr.	14,700	6,500	4,050	25,250
TOTAL	1,466 Cr.	30,500	11,850	46,970	89,320

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure:

		Cumulative Total
up to 31/12/68	110,376	110,376
1969 Printed Estimates	15,000	
1968 Carry over not in printed Estimates	- 5,266	
1969 Revised Estimate	10,500	
1969 Estimated carry fwd	- 766	
of which		
Jan/March 1970	- 1,466 (Recoveries)	
1970/71	700	

(d) Source of Funds:

United Kingdom Development Loan.

2. PROJECT TARGET

To increase the number of trunk telephone circuits between exchanges in the Central and Northern Regions to cater for increasing traffic.

Expected Completion Date

This is a continuous project, but the works should be completed during the financial periods in which they are authorised provided that the manufacturers of equipment maintain satisfactory deliveries.

4. BACKGROUND INFORMATION

To maintain a standard of service acceptable in a national network the number of trunk circuits between exchanges must be adequate in quantity and quality.

4. PROPOSED WORK 1970/73

In 1970/71 the following is proposed :

Provide overhead telephone routes between Chitala-Nkhotakota-Nkhunga and Mlowe-Livingstonia-Chilumba. These will replace sections of the old galvanised iron route which was built at the beginning of the century. Additional work on the Salima-Chitala route will provide better service.

Provide multiplex carrier telephone systems from Lilongwe to Mponela, Mponela to Ntchisi and Salima to Nkhotakota.

The programme for 1972-1973 has been planned in outline to enable equipment to be ordered but the final allocation of equipment between the various routes will depend on the growth of demand for trunk service on these routes.

5. JUSTIFICATION FOR PROPOSED WORK

The service provided on the old single iron wire routes is not up to the minimum standard required of any national network. The old routes, in several instances, have to come down to make way for new road construction or because they are miles from the nearest road and are therefore difficult and expensive to maintain.

Where carrier systems are to be provided, this is because they are the most economical method of providing the number of circuits required.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental staff with the exception of the Nkhotakota building, which will be built by the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE: TRUNK CIRCUIT GROWTH CENTRAL AND NORTHERN REGIONS

RESPONSIBLE MINISTRY/DEPARTMENT: TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969: HEAD 83 ITEM 4

BRITISH AIDED PROJECT NO.: 39

1. PROJECT OFFICER: Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure	Notes	Jan/Mar 1970	1970/71	1971/2	1972/3	Total 3 Yrs
2 Buildings						
(2-1) Carrier & Exchange Equipment building Nkhotakota	(1)	-	2,000	-	-	2,000
Sub Total		-	2,000	-	-	2,000
5 Other Construction						
(5-1) Additional work Salima-Chitala	(2)	1,000				
(5-2) Chitala-Nkhotakota-Nkhunga	(3)	-	9,800	-	-	9,800
(5-3) Mlowe-Livingstonia-Chilumba	(3)	-	4,000	-	-	4,000
1971/2 & 1972/3 Programme				5,350	42,920	48,270
Sub Total		1,000	13,800	5,350	42,920	62,070
7 Other Equipment						
(7-3) Carrier system Salima-Nkhotakota	(4)	-	4,000	-	-	4,000
(7-4) Carrier system Lilongwe-Mponela	(4)	-	6,500	-	-	6,500
(7-5) Carrier system Mponela-Ntchisi	(4)	-	3,500	-	-	3,500
1968 Programme c/f		934				
(7-1) Carrier system Mzuzu-Nkhata Bay c/f	(4)	4,500				
Lilongwe-Salima Equipment c/f		7,900 Cr.				
(7-2) Carrier channels Lilongwe-Salima c/f		-	700			700
1971/2 and 1972/3 Programmes				6,500	4,050	10,550
Sub Total		2,466 Cr.	14,700	6,500	4,050	25,250
TOTAL		1,466 Cr.	30,500	11,850	46,970	89,320

(b) Notes on Expenditure

(1) A new building is required at Nkhotakota to accommodate the carrier telephone system, telephone exchange and power equipment.

(2) Additional work on the Salima-Chitala route is necessary.

(3) As a consequence of the lakeshore highway development, new overhead routes are required: Chitala-Nkhotakota-Nkhunga and Mlowe-Livingstonia-Chilumba.

(4) Carrier telephone systems are required between Lilongwe and Mponela, Mponela and Ntchisi, Salima and Nkhotakota, Mzuzu and Nkhata Bay.

(c) Import Content

	1970	1970/71	1971/72	1972/73	Total 3 Yrs
Telecommunication Equipment	-	12,900	6,200	3,500	22,600
Overhead Route Materials	1,000	12,700	4,950	40,800	59,450
TOTAL	1,000	25,600	11,150	44,300	82,050

(d) Breakdown of Expenditure by Regions

	Jan-March 1970	1970/71		1971/72		1972/73	
	C	C	N	C	N	C	N
Buildings	-	2,000	-	-	-	-	-
Other Construction	1,000	9,800	4,000	2,000	3,350	12,920	30,000
Other Equipment	- 2,466	14,700	-	3,000	3,500	2,050	2,000
TOTAL	- 3,466	26,500	4,000	5,000	6,850	14,970	32,000

3 LOCATION OF CONSTRUCTION

Overhead routes Chitala-Nkhotakota-Nkhunga, Mlowe-Livingstonia-Chilumba. Equipment at Lilongwe, Mponela, Ntchisi, Salima and Nkhotakota.

A building at Nkhotakota to be constructed by the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE : LOCAL TELEPHONE GROWTH

RESPONSIBLE MINISTRY/DEPARTMENT : TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 83 ITEM 5

BRITISH AIDED PROJECT NO. : 39

RELATED PROJECTS : All Trunk Circuit Growth Projects.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar. 1970	1970/71	1971/72	1972/73	3 years
5 Other Construction	21,400	33,600	48,750	52,875	135,225
7 Other Equipment	8,600	11,400	16,250	17,125	44,775
TOTAL	30,000	45,000	65,000	70,000	180,000

(b) Non-British, Non-Malawi Expenditure

Nil

(c) Previous Expenditure

		Cumulative Total
To 31/12/1968		185,898
1969 Printed Estimates	41,370	
1969 Revised Estimates	41,370	
Carry-forward	Nil	

(d) Source of Finance

U.K. Development Loan.

2. PROJECT TARGET

To meet the growing demand for telephone service.

Expected Completion Date

This is a continuous project but the works should be completed in the financial periods in which they are authorised provided that the manufacturers of equipment maintain satisfactory deliveries.

3. BACKGROUND INFORMATION

The high rate of demand for telephone service is being maintained. The former fairly simple underground distribution network in townships is having to be replaced by a more complex network involving ducts and cable chambers. These, while providing a good foundation for future development, will increase the cost above the previous yearly level.

Pressurisation of cables will commence in Limbe during the period 1st April, 1970 to 31st March, 1971 and other exchanges will follow in subsequent years.

4. PROPOSED WORK 1970/73

The extension of the underground cable network within the main townships, wiring of new office blocks, overhead route construction, provision of telephone instruments, private manual branch exchanges and lightning protection equipment. In addition to new service, a considerable amount of work will be needed to transfer existing plant to new premises. Long and expensive connections will only be provided when there is economic or other strong justification.

5. JUSTIFICATION FOR NEW WORK

An adequate telephone service is essential to economic development.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental personnel.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE	LOCAL TELEPHONE GROWTH
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 5
BRITISH AIDED PROJECT NO	39
1. PROJECT OFFICER	Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
5 Other Construction					
Overhead Telephone Routes	8,400	18,000	26,500	27,875	72,375
Underground " "	13,000	15,600	22,250	25,000	62,850
TOTAL	21,400	33,600	48,750	52,875	135,225
7 Other Equipment					
Telephone Instruments	6,600	9,200	13,750	14,125	37,075
Switchboards	1,000	1,100	1,250	1,500	3,850
Wiring & Protection	1,000	1,100	1,250	1,500	3,850
TOTAL	8,600	11,400	16,250	17,125	44,775
TOTAL	30,000	45,000	65,000	70,000	180,000

(b) Notes on Expenditure

Equipment and material will be bought in bulk into Stores and issued on an "as required" basis.

(c) Import Content

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs.
Telephone equipment	18,800	24,200	22,500	25,000	90,500
Overhead route materials	6,700	13,400	19,500	20,600	60,200
TOTAL	25,500	37,600	42,000	45,600	150,700

(a) Breakdown of Expenditure by Regions

		Jan/Mar 1970				1970/71			
	Category	S	C	N	HQ	S	C	N	HQ
5	Other Construction	11,700	8,000	1,700	-	18,300	12,600	2,650	-
7	Other Equipment	4,400	3,675	525	-	5,700	4,950	800	-
	TOTAL	16,100	11,675	2,225	-	24,000	17,550	3,450	-

The apportionment between Regions in 1971/73 will depend on the growth of demand for service within the Regions.

3. LOCATION OF CONSTRUCTION

All parts of Malawi. No building construction involved.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	INTER-REGIONAL TRUNK CIRCUIT GROWTH
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 6
BRITISH AIDED PROJECT NO.	39
RELATED PROJECTS	Trunk Circuit Growth Southern Region, Trunk Circuit Growth Central & Northern Regions, Local Telephone Growth.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/March 1970	1970/71	1971/72	1972/73	Total 3 Yrs
2 Buildings	-	3,000	-	-	3,000
5 Other Construction	1,000	4,300	4,000	-	8,300
7 Other Equipment	18,588	180,268	26,000	8,000	214,268
TOTAL	19,588	187,568	30,000	8,000	225,568

(b) Non-British-Non-Malawi Expenditures: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68		80,614
1969 Printed Estimates	164,561	
1968 Carry over not in printed Estimates	- 2,020	
1969 Revised Estimates	33,385	
1969 Estimated carry forward	129,156	
of which Jan/Mar 1970	19,588	
1970/71	109,568	

(d) Source of Funds

United Kingdom Development Loan.

PROJECT TARGET

To provide adequate circuits to maintain an acceptable grade of service on the main Inter-Regional trunk network and extend the microwave network to the Northern Region.

Expected Completion Date

This is a continuous project. The works authorised should be completed during the financial years in which they are authorised provided that the manufacturers of equipment maintain satisfactory deliveries.

3. BACKGROUND INFORMATION

The main trunk route between the Central and Southern Regions will be by microwave radio. Completion of this route was expected during 1969 but, due to manufacturing delays, this has been extended until 2nd half of 1970. This Lilongwe-Limbe Bearer will be initially equipped with 48 channels but, due to the build-up of traffic on the route, 12 extra channels will be required by the beginning of 1971 and a further 12 by the beginning of 1972. It is proposed to extend this main route to the Northern Region by a spur microwave route of 300 circuit capacity and equipped with 48 channels. Additional 12 channels in the Northern Region are proposed in 1972.

4. PROPOSED WORK 1970/73

The installation of terminal multiplex equipment at Limbe and Lilongwe.

The installation of a spur microwave system between Lilongwe and Mzuzu with four repeater stations. This will involve the construction of roads and the erection of buildings at three of the repeater stations. Power supplies will be required at the four stations.

The provision of additional terminal multiplex equipment in the Northern Region.

5. JUSTIFICATION FOR PROPOSED WORK

Increasing demand for trunk telephone service between the Regions and the need for greater reliability for economy. The initial system will have no protection channel. In case of microwave system failure land lines will be utilised. At a later date, a protection system will be necessary as the land lines will be needed elsewhere.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental staff, with the exception of buildings and roads at three of the four repeater stations.

The locations of buildings and roads, to be constructed by the Ministry of Works, will be finalised on completion of a current survey.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE	INTER-REGIONAL TRUNK CIRCUIT GROWTH
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 6
BRITISH AIDED PROJECT NO.	39
1. PROJECT OFFICER	Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

		Notes	Jan/Mar 1970	1970/71	1971/72	1972/3	Total 3 Yrs
2	Buildings						
(2-2)	Microwave : Lilongwe-Mzuzu	(1)	-	3,000	-	-	3,000
	Sub Total		-	3,000	-	-	3,000
5	Other Construction						
(5-3)	Roads & Towers : Lilongwe-Mzuzu	(2)	-	4,300	4,000	-	8,300
(5-2)	Lilongwe-Mzuzu c/f	(3)	1,000	-	-	-	-
	Sub Total		1,000	4,300	4,000	-	8,300
7	Other Equipment						
(7-3)	Lilongwe-Mzuzu microwave	(4)	-	62,700	18,000	8,000	88,700
(7-4)	Limbe-Lilongwe additional channels	(5)	-	8,000	8,000	-	16,000
	1968 Programme c/f	(6)	8,417				
(7-2)	Lilongwe-Mzuzu carrier system c/f	(7)	10,171	1,329	-	-	1,329
(7-1)	Limbe-Lilongwe microwave c/f	(6)	-	108,239	-	-	108,239
	Sub Total		18,588	180,268	26,000	8,000	214,268
	TOTAL		19,588	187,568	30,000	8,000	225,568

(b) Notes on Expenditure

(1) Buildings for the Northern microwave spur route will be required at Kasungu, Champira and Chikangawa.

(2) Roads will be required, or existing roads improved, at Dowa, Champira, and Chikangawa. Masts will be erected at Lilongwe, Dowa, Kasungu, Champira, Chikangawa and Mzuzu.

(3) Route re-arrangements will be required when the Lilongwe-Mzuzu carrier system and repeaters are installed.

(4) A spur microwave route will be installed between Lilongwe and Mzuzu, with radio repeater stations at Dowa, Kasungu, Champira and Chikangawa. Additional channels will be required in 1972.

(5) Additional carrier channels will be required between Limbe and Lilongwe in 1970 and 1971.

(6) There has been considerable delay in the manufacture of the equipment for the Limbe-Lilongwe and Limbe-Zomba microwave routes.

(7) Delivery of the Limbe-Mzuzu carrier repeaters is expected in the first quarter of 1970 and installation will be effected during 1970/71.

(c) Import Content

	Jan/Mar 1970	1970/71	1971/72	1972/3	Total 3 Yrs
Equipment	17,000	160,000	22,000	8,000	190,000
TOTAL	17,000	160,000	22,000	8,000	190,000

(d) Breakdown of Expenditure by Regions

	1970/71			1971/72			1972/73		
	S	C	N	S	C	N	S	C	N
Buildings	-	1,000	2,000	-	-	-	-	-	-
Other Construction	-	2,000	2,300	-	1,500	2,500	-	-	-
Other Equipment	58,000	85,268	37,000	4,000	13,000	9,000	-	4,000	4,000
TOTAL	58,000	88,268	41,300	4,000	14,500	11,500	-	4,000	4,000

3. LOCATION OF CONSTRUCTION

Blantyre, Zomba, Ncheu, Dedza, Lilongwe, Dowa, Kasungu, Champira, Chikangawa, Mzuzu.

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE — MINOR ENGINEERING PROJECTS

RESPONSIBLE MINISTRY/DEPARTMENT — TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969 — HEAD 83 ITEM 7

BRITISH AIDED PROJECT NO — 39

RELATED PROJECTS — All Telecommunication Projects

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment	1,455	11,800	11,250	17,420	40,470
TOTAL	1,455	11,800	11,250	17,420	40,470

(b) Non-British-Non-Malawi Expenditure: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68	15,761	15,761
1969 Printed Estimates	15,250	
1968 Carry overs not in Printed Estimates	- 1,180	
1969 Revised Estimates	11,440	
Estimated Carry Forward :-	2,630	
of which Jan/Mar 1970	330	
1970/71	2,300	

(d) Source of Funds

United Kingdom Development Loan.

2. PROJECT TARGET

To provide minor items of equipment necessary for telecommunications development but not associated with particular projects.

Expected Completion Date

This is a continuing project.

3. BACKGROUND INFORMATION

Numerous items of tools are required for the installation of equipment, construction of overhead telephone routes and the laying of underground telephone cables.

Additional test gear is required as the network expands and equipment becomes more sophisticated.

Tentage is required for construction gangs.

The cost of maintenance spares for old radio equipment sometimes exceeds the cost of new equipment and those items which are the most expensive to maintain will be replaced.

Galvanised lattice masts are required at radio stations where at present there are only temporary water-pipe type masts.

Diesel generating sets are required to replace existing plant which has been in service for nearly 20 years.

Standby diesel generating sets are required at new stations.

Additional automatic error correcting equipment on the main high frequency radio outlet in order that additional circuits can be brought into use.

4. PROPOSED WORK 1970/71

This project provides for the cost of minor items of equipment which will be ordered from the United Kingdom or drawn from Stores on an "as required" basis.

5. JUSTIFICATION FOR PROPOSED WORK

These minor items are required for the continued development of the telecommunications network to meet the growing demand for service and extension of facilities

6. EXECUTION AND SUPERVISION

By Departmental staff.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE: MINOR ENGINEERING PROJECTS

RESPONSIBLE MINISTRY/DEPARTMENT: TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969: HEAD 83 ITEM 7

BRITISH AIDED PROJECT NO: 39

1. PROJECT OFFICER: Divisional Engineer (Planning) Post Office Headquarters Blantyre

(a) Details of Expenditure

		Notes	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7	Other Equipment						
(7-1)	Tools & Test Gear	(1)	1,125	4,000	6,500	6,500	17,000
(7-2)	Radio Equipment	(2)	-	2,000	-	-	2,000
(7-3)	Masts & Aerials	(3)	-	2,000	2,000	2,000	6,000
(7-4)	Tentage	(4)	-	500	750	750	2,000
	Standby Diesel Generators	(5)	-	-	2,000	8,170	10,170
(7-5)	Additional ARQ Equipment	(6)	-	1,000	-	-	1,000
	1969 Programme c/f	(7)	330	2,300	-	-	2,300
	TOTAL		1,455	11,800	11,250	17,420	40,470

(b) Notes on Expenditure:

(1) Additional tools for the installation of equipment, construction of overhead routes and the laying of underground cable. Includes a cable trailer, two jointers' trailers and one cable wind.
(2) Additional H.F. and V.H.F. equipment, particularly subscribers' radio.
(3) Additional masts and aerials to be associated with note (2).
(4) Tentage is required for construction teams.
(5) Standby diesels generating sets are required at new stations.
(6) Additional automatic error correcting equipment on the main high frequency radio outlet in order that additional circuits can be brought into use.
(7) Late delivery of equipment ordered in 1969.

(c) Import Content

	Jan/March 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7. Other Equipment	1,000	8,500	10,250	16,000	35,750
TOTAL	1,000	8,500	10,250	16,000	35,750

(d) Breakdown of Expenditure by Regions

	Jan-Mar. 1970			1970/71				1971/72				1972/73			
	S	C	M	S	C	M	HQ	S	C	M	HQ	S	C	M	
7 Other Equipment	600	600	255	4750	4550	2000	500	4500	4500	1800	450	7000	7000	2800	6
TOTAL	600	600	255	4750	4550	2000	500	4500	4500	1800	450	7000	7000	2800	6

3. LOCATION OF CONSTRUCTION — Not applicable. (Very numerous minor works)

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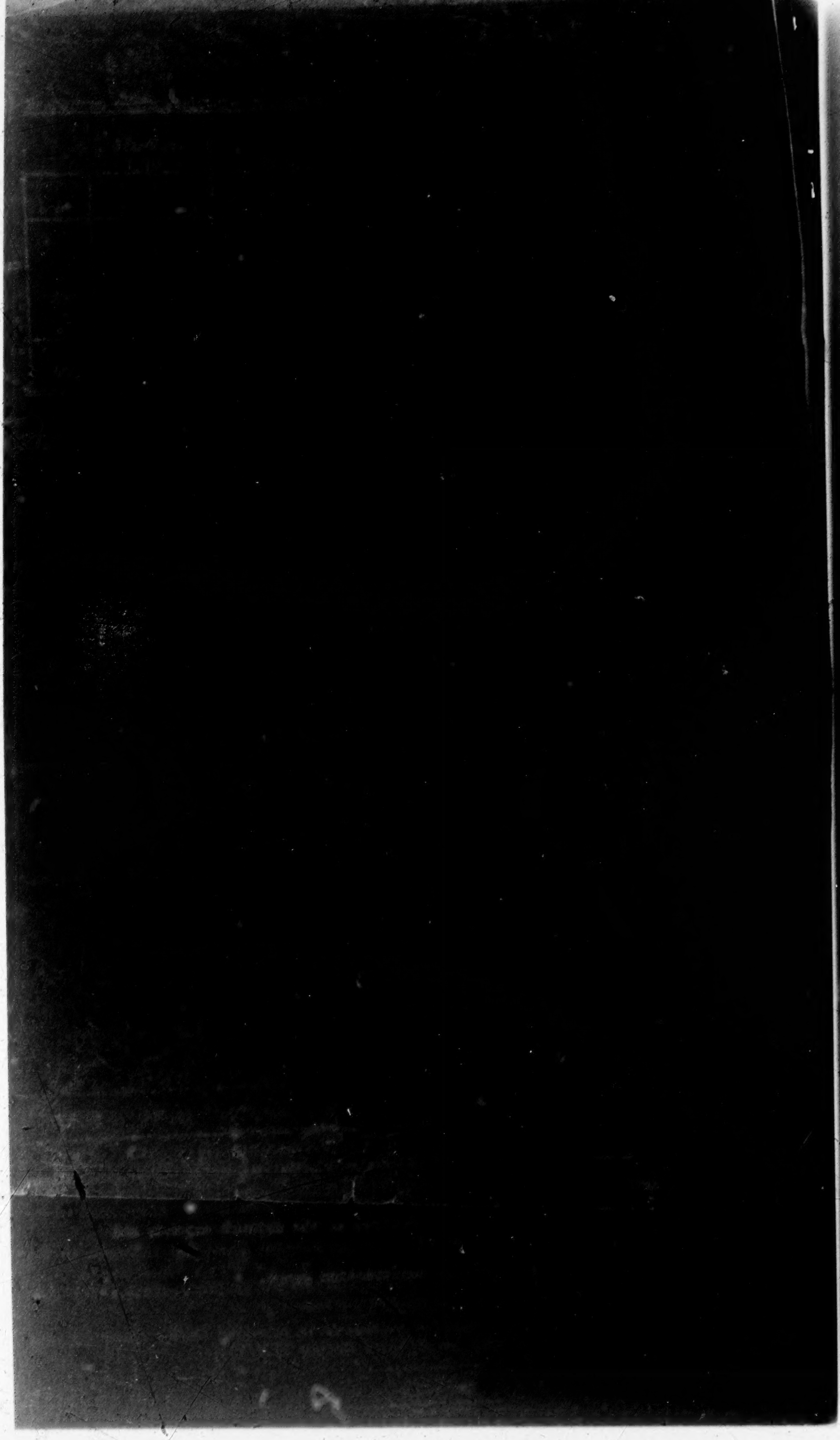

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	AUTOMATIC TELEPHONE EXCHANGES
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 8
BRITISH AIDED PROJECT NO.	39
RELATED PROJECTS	Local Telephone Growth

1. FINANCIAL SUMMARY

(a) Funds Requested

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
Category					
7 Other Equipment	-	31,733	5,300	5,300	42,333
TOTAL	-	31,733	5,300	5,300	42,333

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68	2,729	2,729
1969 Printed Estimates	16,673	
1968 Carry over not in printed Estimates	1,221	
1969 Revised Estimates	12,261	
Estimated Carry Forward :-	5,633	
of which 1970/71	5,633	

(d) Source of Finance

United Kingdom Development Loan.

2. PROJECT TARGET

To provide minor extensions to automatic telephone exchanges to meet growth of traffic.

To provide Private Automatic Branch Exchanges, for Malawi Government Departments and Statutory Bodies, for which an economical rental is charged..

To provide a Speaking Clock in Blantyre with extension of the facility to Lilongwe and Zomba telephone exchange areas.

To provide a 100 line extension to Lilongwe telephone exchange with special facilities for "Direct Dialling In."

Expected Completion Date

This is a continuing project and the works should be completed in the financial periods in which they are authorised provided that the manufacturers of the equipment maintain satisfactory deliveries.

3. BACKGROUND INFORMATION

Increasing demand for trunk telephone service requires the installation of additional equipment, mainly junction relay sets with metering facilities, in a number of automatic exchanges.

It is the responsibility of the Post Office to provide Private Automatic Branch Exchanges for Government Departments etc. (Private users continue to rent their equipment from commercial sources).

One large and one smaller P.A.B.X. are required in the financial year 1st April, 1970 to 31st March, 1971 and one large P.A.B.X. in each of the following years. The replaced automatic exchanges will be used to provide service to other government departments and the replaced manual exchanges to other customers.

The load on operators providing "time" service will be removed from the main exchanges and increased revenue obtained by the provision of an automatic speaking clock.

The extension of Lilongwe automatic exchange will not only provide for additional subscribers but incoming calls to extensions off larger P.A.B.X's can be dialled directly.

4. PROPOSED WORK 1970/73

Installation of minor extension equipment in automatic telephone exchanges.

Installation of Private Automatic Branch Exchanges where required.

Installation of a Speaking Clock with subscriber access from all main exchanges.

Provision of additional lines on Lilongwe Automatic Exchange with special facilities to the larger P.A.B.X. subscribers.

5. JUSTIFICATION FOR PROPOSED WORK

The work is required to meet normal development of the automatic telephone network.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental staff.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE	AUTOMATIC TELEPHONE EXCHANGES
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 8
BRITISH AIDED PROJECT NO.	39
1. PROJECT OFFICER	Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment						
(7-1) Mzuzu Exchange c/f	(5)	-	500	-	-	500
(7-4) Minor extensions	(1)	-	8,000	1,000	1,000	10,000
(7-2) Minor extensions c/f	(6)	-	2,333	-	-	2,333
(7-3) Private Automatic Branch Exchange c/f	(7)	-	2,800	-	-	2,800
(7-5) Private Automatic Branch Exchanges	(2)	-	7,300	4,300	4,300	15,900
(7-6) Speaking Clock	(3)	-	6,800	-	-	6,800
(7-7) Extension Lilongwe Exchange	(4)	-	4,000	-	-	4,000
TOTAL		-	31,733	5,300	5,300	42,333

(b) Notes on Expenditure

(1) Additional relay sets, switches etc. to meet demand.

(2) Private Automatic Branch Exchanges for Government Departments.

(3) Provision of a "Speaking Clock" and extension of this service to Lilongwe and Zomba areas.

(4) Extension of Lilongwe Automatic Telephone Exchange to provide for additional subscriber and direct dialling-in facility to larger Private Automatic Branch Exchange.

(5) Completion of the installation of Mzuzu Automatic Telephone Exchange.

(6) Late delivery of equipment, in particular relay sets.

(7) Late delivery of a Private Automatic Branch Exchange.

(c) Import Content

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
Minor Extensions	-	9,800	1,000	1,000	11,800
P.A.B.X.	-	9,500	4,050	4,050	17,600
Speaking Clock	-	6,600	-	-	6,600
Lilongwe Extension	-	3,300	-	-	3,300
TOTAL	-	29,200	5,050	5,050	39,300

(d) Breakdown of Expenditure by Regions

	1970/71			1971/72			1972/73	
	S	C	N	S	C	N	S	C
7 Other Equipment								
Mzuzu Exchage	-	-	500					
Minor Extensions	6,000	3,333	1,000	500	250	250	400	300
P.A.B.X's	4,800	5,300	-	-	4,300	-	-	4,300
Speaking Clock	6,400	400	-	-	-	-	-	-
Lilongwe Extension	-	4,000	-					
TOTAL	17,200	13,033	1,500	500	4,550	250	400	4,600

3. LOCATION OF CONSTRUCTION

Blantyre, Zomba, Lilongwe and Mzuzu. No building construction involved.

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1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	BUILDINGS FOR TELECOMMUNICATIONS
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 11
BRITISH AIDED PROJECT NO.	39
RELATED PROJECTS	Trunk Circuit Growth Southern Region, Inter-Regional Trunk Circuit Growth.

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/Mar 1970	1970/71	1971/72	1971/3	Total 3 Yrs
2 Buildings	-	20,500	20,500	-	41,000
TOTAL	-	20,500	20,500	-	41,000

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68	12,022	12,022
1969 Printed Estimates	9,100	
1969 Revised Estimate	10,978	
Expected Carry-forward	Nil	

(d) Source of Funds

United Kingdom Development Loan.

2. PROJECT TARGET

To provide buildings necessary for the accommodation of telecommunications equipment and personnel in training.

Expected Completion Date

The buildings to which this Project Submission refers should be completed by 31st March, 1972.

3. BACKGROUND INFORMATION

A building is required to accommodate a telephone exchange and carrier telephone equipment at Mzimba. The old building is termite ridden and scheduled for demolition for road widening purposes. A new site has been allocated and equipment, valued at over £10,000, which is at present accommodated in a temporary metal hut, will be moved to the permanent building.

Two small huts are required to accommodate repeater equipment necessary to enable a higher frequency twelve channel carrier system to be routed over the existing wires between Lilongwe and Mzuzu.

An extension is required to the existing Zomba Carrier Room to accommodate additional equipment essential to meet the growth in trunk circuits.

Progress in advancement of engineering students could be increased by improved training facilities. It is planned to post trainees to the Blantyre area so that they can attend the new Technical College on a part-time basis. Field training will be concentrated in the Blantyre area where the majority of facilities exist. Accommodation for such students does not exist and a hostel, adequate for twelve students initially, is required. Suitable land is available within the engineering complex in Limbe. In the unlikely event of the demand falling away in the future, the building would be used for office accommodation.

The Maintenance Control Centre for Blantyre area is in the telephone exchange building, which is scheduled for demolition, in the centre of the City. It is proposed that a new Control Centre should be established in the industrial area where suitable land can be made available. A small workshop would be included for minor repairs to telephone apparatus. Adequate and secure parking for Post Office vehicles will be provided, thus relieving traffic congestion within Blantyre. Storage accommodation for external materials for day-to-day requirements will also be provided.

4. PROPOSED WORK 1970/73

To erect a new telephone exchange building at Mzimba and repeater station huts at Champira and Mponela.

Extend the Carrier Room in Zomba
Provide a students' hostel in Limbe
Provide a Maintenance Control Centre in Blantyre

5. JUSTIFICATION FOR PROPOSED WORK

Expansion of the telecommunication network and staff training.

6. EXECUTION AND SUPERVISION

The work will be carried out by the Ministry of Works and Supplies.

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE — BUILDINGS FOR TELECOMMUNICATIONS

RESPONSIBLE MINISTRY/DEPARTMENT — TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969 — HEAD 83 ITEM 11

BRITISH AIDED PROJECT NO. — 39

1. PROJECT OFFICER — Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

		Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
	2 Buildings					
(2-1)	Mzimba Exchange and Repeater Huts	-	4,000	-	-	4,000
(2-2)	Trainees' Hostel, Limbe	-	7,500	-	-	7,500
(2-3)	Zomba Carrier Room Extension	-	1,000	-	-	1,000
(2-4)	Maintenance Control Centre Blantyre	-	8,000	-	-	8,000
	Rumpi Equipment Room	-	-	1,000	-	1,000
	Nkhata Bay Telephone Exchange	-	-	2,000	-	2,000
	Zomba Engineer HQ.	-	-	5,000	-	5,000
	Extension Chichiri Exchange	-	-	7,000	-	7,000
	Nyakhungu V.H.F. Station and Road	-	-	3,500	-	3,500
	Chikwawa Telephone Exchange	-	-	2,000	-	2,000
	TOTAL	-	20,500	20,500	-	41,000

(b) Notes on Expenditure

Where imported materials are required for building purposes, they will be purchased in Britain.

(c) Import Content

Approximately 40%.

(d) Breakdown of Expenditure by Regions

	1970/71				1971/72			
	S	C	N	HQ	S	C	N	HQ
2 Buildings	16,500	500	3,500	-	17,500	-	3,000	-
TOTAL	16,500	500	3,500	-	17,500	-	3,000	-

3. LOCATION OF CONSTRUCTION

Mzimba, Champira, Mponela, Zomba, Limbe and Blantyre in 1970/7..

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE: EXTERNAL TELECOMMUNICATIONS

RESPONSIBLE MINISTRY/DEPARTMENT: TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969: HEAD 83 ITEM 12

BRITISH AIDED PROJECT NO.: 39

RELATED PROJECTS: All Trunk Circuit Growth. Local Telephone Growth. Telex Exchange Extension.

1. FINANCIAL SUMMARY

(a) Funds Requested

Catergory	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment	-	7,000	38,000	7,000	52,000
TOTAL	-	7,000	38,000	7,000	52,000

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68	2,871	2,871
1969 Printed Estimates	Nil	
1969 Revised Estimates	129	(Carry-forward from 1968)
Estimated Carry Forward :-	Nil	

(d) Source of Funds

United Kingdom Development Loan.

2. PROJECT TARGET

Provision of adequate telephone and telegraph circuits to adjacent territories and a second circuit to the international switching centre in Nairobi.

Expected Completion Date

The works should be completed in the financial periods for which they are authorised provided that manufacturers maintain satisfactory deliveries.

3. BACKGROUND INFORMATION

Zambia will have completed a new overhead telephone from Lusaka to the border at Chipata by the beginning of 1970 to meet our route from Lilongwe. A twelve channel telephone system, with telegraphs, is required to provide inter-territorial service and to cater for transit traffic.

A V.H.F. radio path has been proved between Malawi's Kyika radio station and a new station to be established by the East African Posts and Telecommunications Corporation near Mbeya in Tanzania. A radio terminal with multiplex channelling equipment is required.

Traffic routed via Nairobi is increasing and a second circuit is required. There is channel capacity, but a "Lincompex" terminal is required to give a commercially acceptable circuit. The Nairobi earth station, to operate in conjunction with the Indian Ocean satellite, is scheduled to come into service in 1970. This is likely to lead to further traffic increases, justifying a third circuit by 1973. Traffic to Southern Africa including Lesotho, Botswana etc. is increasing and the present 7 channels on VHF and 4 on HF radio are inadequate. The circuits are not up to international standards and new channelling as well as a new bearer are required.

There is an increasing community of interest with Swaziland and a point-to-poin HF radio circuit is justified.

4. PROPOSED WORK 1970/73

Provision of a twelve channel, telephone carrier plus telegraph, terminal at Lilongwe.

Provision of a V.H.F. radio terminal at the Nyika radio station, and multiplex equipment at Mzuzu.

Provision of "LINCOMPEX" terminals with echo suppressors at Blantyre. Provisio of a H.F. radio terminal at Blantyre.

5. JUSTIFICATION FOR NEW WORK

To meet increasing demand for telephone and telegraph service to, and also betw adjacent territories. The plans are generally in accordance with recommendations of the International Telecommunications Union.

6. EXECUTION AND SUPERVISION

The work will be carried out by Dopartmental staff.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE — EXTERNAL TELECOMMUNICATIONS

RESPONSIBLE MINISTRY/DEPARTMENT — TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969 — HEAD 83 ITEM 12

BRITISH AIDED PROJECT NO. — 39

1. PROJECT OFFICER — Divisional Engineer (Planning) Post Office Headquarters Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment					
(7-1) Malawi-Zambia Telephone & Telegraph Terminal	-	7,000	-	-	7,000
Malawi-East Africa VHF radio & channels	-	-	6,000	-	6,000
Malawi-Nairobi (Overseas) Lincompex	-	-	4,000	4,000	8,000
Malawi-Southern Africa Additional VHF bearer	-	-	19,000	-	19,000
Malawi-Southern Africa Additional channels	-	-	9,000	-	9,000
Malawi-Swaziland HF Radio	-	-	-	3,000	3,000
TOTAL	-	7,000	38,000	7,000	52,000

(b) Notes on Expenditure

All equipment will be of British manufacture.

(c) Import Content	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
Other Equipment		6,800	37,000	6,700	51,500
		6,800	37,000	6,7000	51,500

(d) Breakdown of Expenditure by Regions

	1970/71			1971/72			1972/73		
	S	C	N	S	C	N	S	C	N
Other Equipment	-	7,000	-	32,000	-	6,000	7,000	-	-
TOTAL	-	7,000	-	32,000	-	6,000	7,000	-	-

3. LOCATION OF CONSTRUCTION

Lilongwe, Blantyre, Mzuzu, Chelinda

Traffic routed via Nairobi is [illegible] of the
There is channel capacity, but [illegible]
commercially acceptable circuit.
conjunction with [illegible]
970. This is likely to lead to [illegible]
circuit by 1973. [illegible]
is increasing and [illegible]
the circuits are [illegible]
have begun to develop [illegible]

There is an increasing [illegible]
radio circuit to [illegible]

[illegible]

Proc[illegible]
[illegible]

Lat[illegible]
going [illegible]

[illegible]

[illegible]

[

1970/71 DEVELOPMENT ESTIMATES

PROJECT SUBMISSION

PROJECT TITLE	AUTOMATIC TELEX EXCHANGE EXTENSION
RESPONSIBLE MINISTRY/DEPARTMENT	TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS
MALAWI DEVELOPMENT ESTIMATES 1969	HEAD 83 ITEM 9
BRITISH AIDED PROJECT NO.	39
RELATED PROJECTS	Teleprinters, Local Telephone Growth

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan-Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment	-	11,000	-	-	11,000
TOTAL	-	11,000	-	-	11,000

(b) Non-British, Non-Malawi Expenditure: Nil

(c) Previous Expenditure

		Cumulative Total
Up to 31/12/68	29,243	29,243
1969 Printed Estimates	500	
1969 Revised Estimates	937 (including 437 Carry-forward from 1968	
Estimated Carry Forward :-	Nil	

(d) Source of Funds

United Kingdom Development Loan.

2. PROJECT TARGET

To extend the existing Telex Exchange by 50 lines, thus doubling its present capacity, and increasing the number of junction circuits to other countries.

Expected Completion Date

The installation should be completed before 31st March, 1971 provided that delivery of the extension equipment is not delayed.

3. BACKGROUND INFORMATION

There is an increasing demand for telex service and Malawi is no exception. The capacity of the 50 - line automatic exchange provided two years ago, when there were only twelve customers, will be inadequate before the extension is installed.

It is anticipated that a subsidiary exchange will be required in Lilongwe in 1973/74.

4. PROPOSED WORK 1970/73

The installation of a fifty line extension to the present automatic telex exchange.

5. JUSTIFICATION FOR PROPOSED WORK

The service is necessary to business interests. There are now more application for service than there are spare lines on the present exchange.

Telex is a good revenue earner. Each connection brings about £700 a year in rental and call charges.

6. EXECUTION AND SUPERVISION

The work will be carried out by Departmental staff.

	11'000	-	-	11'0
	11'000	-	-	11'0

MISSING TONING
PROTECT SUBMISSION

MISSING EXCHANGE MAINT NATIONAL
MAINTENANCE AND COMMUNICATIONS
SIGNS AND INTERCOMMUNICATIONS

NEED TO CLEAN 9

Intermittent local telephone circuit

1970/71 DEVELOPMENT ESTIMATES

APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE — AUTOMATIC TELEX EXCHANGE EXTENSION

RESPONSIBLE MINISTRY/DEPARTMENT — TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES 1969 — HEAD 83 ITEM 9

BRITISH AIDED PROJECT NO. — 39

1. PROJECT OFFICER — Divisional Engineer (Planning) Post Office Headquarters, Blantyre

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan/Mar 1970	1970/71	1971/72	1972/73	Total 3 Yrs
7 Other Equipment	-	11,000	-	-	11,000
TOTAL	-	11,000	-	-	11,000

(b) Notes on Expenditure

The equipment will be purchased from Britain.

(c) Import Content

	1970/71
Telex Exchange Extension	8,500
TOTAL	8,500

(d) Breakdown of Expenditure by Regions

All expenditure will be in the Southern Region.

3. LOCATION OF CONSTRUCTION

Blantyre.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : LOCAL TELEPHONE GROWTH (CABLES)

RESPONSIBLE MINISTRY/DEPARTMENT : TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 83 ITEM 14

RELATED PROJECTS : All Trunk Circuit Growth
Automatic Exchanges
Blantyre/Limbe Telephone Exchange Equipment

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
5 Other Construction	-	12,000	6,000	10,000	28,000
7 Other Equipment	6,500	100,480	36,750	40,000	177,230
TOTAL	6,500	112,480	42,750	50,000	205,230

(b) Non-Danish, Non-Malawi Expenditure: Except for local construction costs the whole of the expenditure will be for Danish imports.

(c) Previous Expenditure

	£	Cumulative Total
Up to 31/12/68		204
1969 Printed Estimates	55,730	
1968 Carry over not in printed Estimates	43,796	
1969 Revised Estimate	44,796	
1969 Estimated Carry-forward	54,730	
of which: Jan/Mar 1970	1,000	
1970/71	53,730	

(d) Source of Funds

Denmark/Malawi Loan.

2. PROJECT TARGET

To meet the growing demand for telephone service throughout Malawi.

Expected Completion Date

The works should be completed within the financial periods in which they are authorised.

3. BACKGROUND INFORMATION

The high growth of demand for telephone service is being maintained, so that the former fairly simple underground telephone distribution network in townships is having to be enlarged. This will provide a good foundation for future development, but will increase the cost above the previous yearly level. It is imperative that the initial schemes are carried out with a view to further expansion, and financial assistance for the local costs of laying cables, duct-ways and joint-boxes is also requested. (These local costs have been included in "Other Construction".)

4. PROPOSED WORK 1970/73

Expansion of the underground telephone cable network within the main townships, extension to new areas of development, and interconnecting trunk circuits.

5. **JUSTIFICATION FOR PROPOSED WORK**

Underground cables which are the subject of this project are an essential part of the telephone network.

6. **EXECUTION AND SUPERVISION**

All work will be carried out and supervised by Departmental staff.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : LOCAL TELEPHONE GROWTH (CABLES)

RESPONSIBLE MINISTRY/DEPARTMENT : TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 83 ITEM 14

1. PROJECT OFFICER : Divisional Engineer (Planning), Post Office Headquarters, Blantyre.

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Jan/Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
5 Other Construction Laying Telephone Cables	-	12,000	6,000	10,000	28,000
7 Other Equipment Underground Telephone Cables	6,500	100,480	36,750	40,000	177,230
TOTAL	6,500	112,480	42,750	50,000	205,230

(b) Notes on Expenditure

Materials purchased under this item will be booked into Stores, and issued on an "as required" basis.

(c) Import Content

	Jan/Mar 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
Cables, Laying and Jointing materials	6,500	102,000	37,000	42,000	181,000
TOTAL	6,500	102,000	37,000	42,000	181,000

(d) Breakdown of Expenditure by Region

	Jan/Mar 1970			1970/71			1971/72		
Category	S	C	N	S	C	N	S	C	N
5 Other Construction	-	-	-	7,000	4,000	1,000	3,000	2,500	500
7 Other Equipment	3,000	2,000	1,500	55,480	40,000	5,000	20,500	13,500	2,750
TOTAL	3,000	2,000	1,500	62,480	44,000	6,000	23,500	16,000	3,250

3. LOCATION OF CONSTRUCTION

All parts of Malawi.

3.

Underground cables ... part of the telephone network.

6.

1970/71 DEVELOPMENT ESTIMATES
PROJECT SUBMISSION

PROJECT TITLE : TELEPRINTER EQUIPMENT

RESPONSIBLE MINISTRY/DEPARTMENT : TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 83 ITEM 15

DANISH AIDED PROJECT

RELATED PROJECTS : Automatic Telex Exchange Extension

1. FINANCIAL SUMMARY

(a) Funds Requested

Category	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
7 Other Equipment	11,000	32,000	22,000	25,000	79,000
TOTAL	11,000	32,000	22,000	25,000	79,000

(b) Non-Danish, Non-Malawi Expenditure:

Nil

(c) Previous Expenditure

	£	Cumulative Total
Up to 31/12/68		Nil
1969 Printed Estimates	40,000	
1969 Revised Estimate	19,000	
Estimated Carry-Forward	21,000	
of which: Jan/Mar 1970	11,000	
1970/71	10,000	

(d) Source of Funds

Denmark/Malawi Loan

2. PROJECT TARGET

To provide teleprinters and associated equipment to meet the demand for additional equipment for Telex subscribers, rented private wires and Post Office circuits.

Expected Completion Date

Continuing project.

3. BACKGROUND INFORMATION

Until 1964, there were only 5 telex subscribers in the whole country.

There are now 28 subscribers with 19 waiting for service. In addition the demand for private point to point teleprinter circuits has increased.

4. PROPOSED WORK 1970/71

It is proposed that an average of 25 units of teleprinters and associated equipment should be purchased each year and installed as required.

5. JUSTIFICATION FOR PROPOSED WORK

There is an increasing world demand for Telex service and Malawi is no exception since it is necessary to business and other interests. Telex is a good revenue earner, each installation bringing in about £700 a year gross income.

6. EXECUTION AND SUPERVISION

The work will be carried out entirely by Departmental staff.

1970/71 DEVELOPMENT ESTIMATES
APPENDIX TO PROJECT SUBMISSION

PROJECT TITLE : TELEPRINTER EQUIPMENT

RESPONSIBLE MINISTRY/DEPARTMENT : TRANSPORT AND COMMUNICATIONS/ POSTS AND TELECOMMUNICATIONS

MALAWI DEVELOPMENT ESTIMATES, 1969 : HEAD 83 ITEM 15

DANISH AIDED PROJECT

1. PROJECT OFFICER : Divisional Engineer (Planning), Post Office Headquarters, Blantyre.

2. FINANCIAL DETAILS

(a) Details of Expenditure

	Notes	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
7 Other Equipment						
Teleprinter & associated equipment		-	22,000	22,000	25,000	69,000
Teleprinter & associated equipment c/f	(1)	11,000	10,000	-	-	10,000
TOTAL		11,000	32,000	22,000	25,000	79,000

(b) Notes on Expenditure

(1) Delayed delivery of teleprinters and associated equipment.

(c) Import Content

	Jan/Mar. 1970	1970/71	1971/72	1972/73	TOTAL 3 Years
Teleprinters, etc.	10,000	30,000	20,000	22,500	72,500
TOTAL	10,000	30,000	20,000	22,500	72,500

(d) Breakdown of Expenditure by Region

	Jan/Mar. 1970			1970/71			1971/72		
Category	S	C	N	S	C	N	S	C	N
7 Other Equipment	9,000	2,000	-	27,000	4,000	1,000	16,000	5,000	1,000
TOTAL	9,000	2,000	-	27,000	4,000	1,000	16,000	5,000	1,000

3. LOCATION OF CONSTRUCTION

All parts of Malawi, (all by Department of Posts and Telecommunications).